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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : A61K 7/00, 7/021, 7/025, 7/06, 7/09, 7/16, 7/32, 7/42, 31/74		A1	(11) International Publication Number: WO 98/48768
(21) International Application Number: PCT/US98/08931		(43) International Publication Date: 5 November 1998 (05.11.98)	
(22) International Filing Date: 1 May 1998 (01.05.98)		(74) Agents: KREBS, Robert, E. et al.; Burns, Doane, Swecker & Mathis, L.L.P., P.O. Box 1404, Alexandria, VA 22313-1404 (US).	
(30) Priority Data: 08/846,883 1 May 1997 (01.05.97) US		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).	
(63) Related by Continuation (CON) or Continuation-in-Part (CIP) to Earlier Application US 08/846,883 (CON) Filed on 1 May 1997 (01.05.97)			
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Published

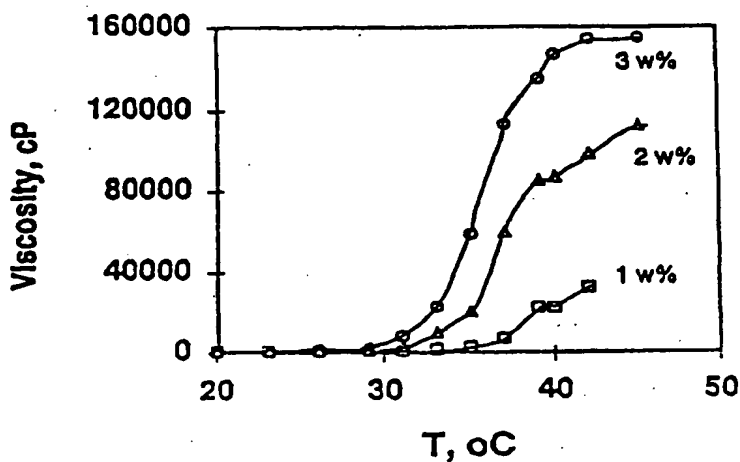
With international search report.

Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.

(54) Title: COMPOSITIONS FOR COSMETIC APPLICATIONS

(57) Abstract

A cosmetic composition is described having a cosmetically acceptable carrier, comprising a reverse thermal viscifying polymer network comprising at least one poloxamer component capable of aggregation in response to a change in temperature randomly bonded to at least one poly(acrylic acid) component; and a cosmetically active agent which imparts a preselected cosmetic effect, said carrier and said agent disposed within an aqueous-based medium.



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COMPOSITIONS FOR COSMETIC APPLICATIONS

This application is a continuation-in-part application of copending application
5 U.S.S.N. 60/034,805 filed January 2, 1997, and entitled "Responsive Polymer
Networks and Methods of Their Use", which is a continuation-in-part application of
copending application PCT/US96/10376 filed June 14, 1996, designating the United
States, and entitled "Responsive Polymer Networks and Methods of Their Use", which
is a continuation-in-part application of copending application U.S.S.N. 08/580,986 filed
10 January 3, 1996, and entitled "Responsive Polymer Networks and Methods of Their
Use", each of which is incorporated entirely by reference.

Field of the Invention

The present invention relates to a cosmetic composition useful in a variety of
15 topical and personal care products, including treatments of disorders and imperfections
of the skin or other areas of the body. More particularly, the present invention is
directed to a cosmetic composition comprising a poloxamer:poly(acrylic acid)
polymer network that can be designed to reversibly gel over a wide range of
conditions to provide a composition having a controllable range of viscosities, making
20 it useful in a variety of cosmetic and personal care applications.

Background of the Invention

Many examples are known of cosmetic compositions intended for treatment of
the skin or elsewhere on the body, where it is desired to have certain properties of
25 viscosity. Hydrogels, such as cellulose, have been included as thickeners in cosmetic
compositions. A hydrogel is a polymer network which absorbs a large quantity of
water without the polymer dissolving in water. The hydrophilic areas of the polymer
chain absorb water and form a gel region. The extent of gelation depends upon the
volume of the solution which the gel region occupies.

30 Reversibly gelling solutions are known in which the solution viscosity increases

and decreases with an increase and decrease in temperature, respectively. Such reversibly gelling systems are useful wherever it is desirable to handle a material in a fluid state, but performance is preferably in a gelled or more viscous state.

A known material with these properties is a thermal setting gel using block copolymer polyols, available commercially as Pluronic® polyols (BASF, Ludwigshafen, Germany), which is described in U.S. Patent No. 4,188,373. Adjusting the concentration of the polymer gives the desired liquid-gel transition. However, concentrations of the polyol polymer of at least 18-20 % by weight are needed to produce a composition which exhibits such a transition at commercially or physiologically useful temperatures. Also, solutions containing 18-20 % by weight of responsive polymer are typically very viscous even in the "liquid" phase, so that these solutions can not function under conditions where low viscosity, free-flowing is required prior to transition. In addition, these polymer concentrations are so high that the material itself may cause unfavorable interactions during use.

Another known system which is liquid at room temperature, but forms a semi-solid when warmed to about body temperature is formed from tetrafunctional block polymers of polyoxyethylene and polyoxypropylene condensed with ethylenediamine, commercially available as Tetronic® polyols. These compositions are formed from approximately 10% to 50% by weight of the polyol in an aqueous medium. See, U.S. Patent No. 5,252,318.

Joshi *et al.* in U.S. Patent No. 5,252,318 reports reversible gelling compositions which are made up of a physical blend of a pH-sensitive gelling polymer (such as a cross-linked poly(acrylic acid) and a temperature-sensitive gelling polymer (such as methyl cellulose or block copolymers of poly(ethylene glycol) and poly(propylene glycol)). In compositions including methylcellulose, 5- to 8-fold increases in viscosity are observed upon a simultaneous change in temperature and pH for very low methylcellulose levels (1-4% by weight). See, Figs. 1 and 2 of Joshi *et al.* In compositions including Pluronic® and Tetronic® polyols, commercially available forms of poly(ethylene glycol)/poly(propylene glycol) block copolymers, significant increases in viscosity (5- to 8-fold) upon a simultaneous change in temperature and pH

are observed only at much higher polymer levels. See, Figs. 3-6 of Joshi *et al.*

Hoffman *et al.* in WO 95/24430 disclose block and graft copolymers comprising a pH-sensitive polymer component and a temperature-sensitive polymer component. The block and graft copolymers are well-ordered and contain regularly repeating units of the pH-sensitive and temperature-sensitive polymer components. The copolymers are described as having a lower critical solution temperature (LCST), at which both solution-to-gel transition and precipitation phase transition occur. Thus, the transition to a gel is accompanied by the clouding and opacification of the solution. Light transmission is reduced, which may be undesirable in many applications, where the aesthetic characteristics of the composition are of some concern.

Thus, the known systems which exhibit reversible gelation are limited in that they require large solids content and/or in that the increase in viscosity less than 10-fold. In addition, some known systems exhibit an increase in viscosity which is accompanied with the undesirable opacification of the composite.

Summary of the Invention

It is an object of the present invention to provide a cosmetic composition which includes a component capable of reversible gelation or viscosification.

It is a further object of the invention to provide a cosmetic composition which includes an ingredient capable of gelation or viscosification at very low solids content.

It is another object of the present invention to provide a cosmetic composition which possesses improved flow and gelation characteristics as compared to properties possessed by conventional reversible gelation compositions.

It is a further object of the invention to provide a polymer network composition for use in cosmetic compositions useful as a surfactant or emulsifier in the solubilization of additives and, in particular, hydrophobic additives.

It is a further object of the invention to provide a cosmetic composition which possesses the appropriate thickness, emolliency and cosmetic effect with a minimum of solids content.

It is a further object of the invention to provide a polymer network for use in

cosmetic compositions useful as a suspending agent for otherwise insoluble additives.

It is yet a further object of the present invention to provide a composition capable of solubilizing emulsions at elevated temperatures.

It is yet a further object of the invention to provide new and useful cosmetic compositions incorporating the reversibly gelling polymer network composition of the present invention, which take advantage of its unique advantageous properties.

It is yet another object of the present invention to provide reversibly gelling polymer network compositions which are composed of biocompatible polymers.

These and other objects of the invention are achieved with a cosmetic composition which incorporates a poloxamer:poly(acrylic acid) polymer network as a cosmetically acceptable carrier. The polymer network comprises a poloxamer component randomly bonded to a poly(acrylic acid), or PAA, component in an aqueous-based medium, the polymer network being capable of aggregating in response to an increase in temperature. The reverse thermal viscosifying poloxamer:poly(acrylic acid) polymer network includes random covalent bonding between the poly(acrylic acid) component and the poloxamer component of the network. The polymer network may also include some unbound or "free" poloxamer or other additives which contribute to or modify the characteristic properties of the polymer composition.

In addition, the cosmetic composition includes a cosmetic agent selected to provide a preselected cosmetic effect. By "cosmetic agent", as that term is used herein, it is meant that the additive imparts a cosmetic effect. A cosmetic effect is distinguishable from a pharmaceutical effect in that a cosmetic effect relates to the promoting bodily attractiveness or masking the physical manifestations of a disorder or disease. In contrast, a pharmaceutical seeks to treat the source or symptom of a disease or physical disorder. It is noted however, that the same additives may have either a cosmetic or pharmaceutical effect, depending upon the amounts used and the manner of administration.

By "cosmetic" as that term is used herein, it is meant the cosmetic and

personal-care applications intended to promote bodily attractiveness or to cover or mask the physical manifestations of a disorder or disease. Cosmetics include those products subject to regulation under the FDA cosmetic guidelines, as well as sunscreen products, acne products, skin protectant products, anti-dandruff products, and deodorant and antiperspirant products.

By "gelation" or viscosification, as that term is used herein, it is meant a drastic increase in the viscosity of the polymer network solution. Gelation is dependent on the initial viscosity of the solution, but typically a viscosity increase in the range of preferably 2- to 100-fold, and preferably 5- to 50-fold, and more preferably 10- to 20-fold is observed in the polymer network which is used in the preparation of the cosmetic compositions of the invention. Such effects are observed in a simple polymer network solution and the effect may be modified by the presence of other components in the cosmetic composition.

By "reversibly gelling" as that term is used herein, it is meant that the process of gelation takes place upon an *increase* in temperature rather than a decrease in temperature. This is counter-intuitive, since it is generally known that solution viscosity *decreases* with an increase in temperature.

As used herein, "poloxamer" is a triblock copolymer derived from poly(ethylene glycol)-poly(propylene glycol)-poly(ethylene glycol) blocks. The poloxamer is capable of responding to a change in temperature by altering its degree of association and/or agglomeration. The aggregation may be in the form of micelle formation, precipitation, labile crosslinking or other factors. The poloxamer has the general formula of a triad ABA block copolymer, $(P_1)_a(P_2)_b(P_1)_a$, where P_1 = poly(ethylene glycol) and P_2 = poly(propylene glycol) blocks, where a is in the range of 10-50 and where b is in the range of 50-70.

The poly(acrylic acid) component includes poly(acrylic acid) and its salts. The poly(acrylic acid) supports and interacts with the poloxamer component so that a multi-material, responsive polymer network is formed. The interaction of the poloxamer and poly(acrylic acid) exhibits a synergistic effect, which magnifies the effect of the poloxamer component in viscosifying and/or gelling the solution.

The novel interaction between the constituent polymers components of the polymer network permits formation of gels at very low solids content. Gelation and/or viscosification is observed in aqueous solutions having about 0.01 to 20 wt% of the poloxamer component and about 0.01 to 20 wt% of the poly(acrylic acid) component.

5 A typical reversibly gelling polymer network may be comprised of less than about 4 wt% of total polymer solids (e.g., poloxamer and poly(acrylic acid)) and even less than 1 wt% total polymer solids while still exhibiting reverse thermal viscosification. Of course, the total solids content including additives of a reversibly gelling polymer network composition may be much higher. The viscosity of the gel increases at least
10 ten-fold with an increase in temperature of about 5°C at pH 7 and 1 wt% polymer. Viscosity increases may be even greater over a larger temperature range at pH 7 and 1% polymer network content.

The relative proportion of poloxamer and poly(acrylic acid) may vary dependent upon the desired properties of the polymer composition. In one
15 embodiment, the poloxamer is present in a range of about 1 to 20 wt% and the poly(acrylic acid) is present in a range about of 99 to 80 wt%. In another embodiment, the poloxamer component is present in a range of about 21 to 40 wt% and the poly(acrylic acid) component is present in a range of about 79 to 60 wt%. In another embodiment, the poloxamer component is present in a range of about 41 to 50
20 wt% and the poly(acrylic acid) component is present in a range of about 59 to 50 wt%. In another embodiment, the poloxamer component is present in a range of about 51 to 60 wt% and the poly(acrylic acid) component is present in a range of about 49 to 40 wt%. In yet another embodiment, the poloxamer component is present in a range of about 61 to 90 wt% and the poly(acrylic acid) component is present in a
25 range of about 39 to 20 wt%. In another embodiment, the poloxamer component is present in a range of about 81 to 99 wt% and the poly(acrylic acid) component is present in a range of about 19 to 1 wt%.

The poloxamer:poly(acrylic acid) polymer network described above is included
in a cosmetic composition to improve the flow characteristics, thickness and other
30 properties of the composition. The composition includes additional cosmetic agents.

such as are needed for the cosmetic purpose of the composition. Additives also may be included to modify the polymer network performance, such as to increase or decrease the temperature of the liquid-to-gel transition and/or to increase or decrease the viscosity of the responsive polymer composition.

5 In one aspect of the invention, the poloxamer:poly(acrylic acid) polymer network is incorporated into a cosmetic compositions to impart thickening properties to the cosmetic composition at the use and/or application temperature. Such thickening properties include enhanced overall viscosity, as well as a desirable viscosity response with temperature. The polymer network may be useful as a thickener in pH ranges
10 where other thickeners are not effective.

In another aspect of the invention, the poloxamer:poly(acrylic acid) polymer network is incorporated into a cosmetic composition to stabilize and solubilize hydrophobic agents in the cosmetic composition. The polymer network may be included to increase emulsion stability. Many emulsions, i.e., suspension of small
15 droplets or particles of a first material in a second material, lose viscosity upon heating. As will be demonstrated herein, the poloxamer:poly(acrylic acid) polymer network retains its emulsifying properties even with temperature increase.

In addition, it may be included in the composition to impart emolliency to the composition. The composition may also act as a film-forming agent after it has been
20 applied to the skin. This film-forming agent may be used as a barrier to prevent water loss from the skin which contributes to the moisturization of the skin.

In another aspect of the invention, the poloxamer:poly(acrylic acid) polymer network may be included as an additive in cosmetic applications to prevent viscosity loss at elevated temperatures.
25

Brief Description of the Drawing

The invention is described with reference to the Drawing, which is presented for the purpose of illustration and is in no way intended to be limiting, and in which:

Figure 1 is a graph of viscosity vs. temperature for a 1 wt%, 2 wt% and 3 wt%
30 responsive polymer network aqueous composition of a poloxamer/poly(acrylic acid)

(1:1) at pH 7.0 measured at a shear rate of 0.44 sec^{-1} ;

Figure 2 is a graph of viscosity vs. temperature for a 1 wt% poloxamer: poly(acrylic acid) polymer network composition demonstrating reversibility of the viscosity response;

5 Figure 3 shows the viscosity response of a 2 wt% poloxamer:poly(acrylic acid) polymer composition at various shear rates;

Figure 4 shows a viscosity response curve for a 2 wt% poloxamer: poly(acrylic acid) polymer network composition prepared with nominal mixing and stirring and prepared using high shear homogenization (8000 rpm, 30 min);

10 Figure 5 is a graph of viscosity vs. temperature for a 1 wt% poloxamer: poly(acrylic acid) polymer network composition at various pHs;

Figure 6 is a graph of viscosity vs. temperature for a 1 wt% poloxamer: poly(acrylic acid) polymer network composition with and without addition of 0.25 wt% KCl;

15 Figure 7 is a graph of viscosity vs. temperature for a 1 wt% poloxamer: poly(acrylic acid) polymer network composition with and without addition of 0.5 wt% acetamide MEA;

Figure 8 is a graph of viscosity vs. temperature for a 1 wt% poloxamer: poly(acrylic acid) polymer network composition without and with 5 wt%, 10 wt% and 20 wt% added ethanol, respectively;

Figure 9 is an illustration of a reversibly gelling polymer network used as an emulsifier and stabilizer for a hydrophobic agent;

Figure 10 is a schematic illustration of the poloxamer:poly(acrylic acid) polymer network below and above the transition temperature illustrating the aggregation of the hydrophobic poloxamer regions;

25 Figure 11 is a graph of viscosity vs. pH for a 1 wt% responsive polymer network aqueous composition of a poloxamer/poly(acrylic acid) (1:1) measured at a shear rate of 0.44 sec^{-1} ;

Figure 12 is a plot of viscosity vs. temperature for (a) a 1 wt% responsive polymer network aqueous composition of Pluronic® F127 poloxamer/poly(acrylic acid)

30

(1:1) and (b) a 1 wt% physical blend of Pluronic® F127 poloxamer/poly(acrylic acid) (1:1) at pH 7.0 measured at a shear rate 0.22 sec^{-1} ;

Figure 13 is a plot of viscosity vs. temperature for a 1 wt% responsive polymer network aqueous composition of Pluronic® F88 poloxamer/poly(acrylic acid) (1:1) at pH 7.0 measured at a shear rate 2.64 sec^{-1} ;

Figure 14 is a graph of the viscosity vs. temperature effect for a responsive polymer network composition of 2 wt% Pluronic® P104 poloxamer/poly(acrylic acid) (1:1) in deionized water at pH 7.0 measured at shear rate of 22 sec^{-1} ;

Figure 15 is plot of viscosity vs. temperature for a responsive polymer network composition of 2 wt% Pluronic® F123 poloxamer/poly(acrylic acid) (1:1) at pH 7.0 measured at a shear rate of 22 sec^{-1} ;

Figure 16 is a plot of viscosity vs. temperature for 1 wt% made of series of poloxamers and poly(acrylic acid) (1:1) in deionized water at a shear rate of 132 sec^{-1} ;

Figure 17 is a plot showing release of hemoglobin from a poloxamer/poly(acrylic acid) polymer network of the invention;

Figure 18 is a plot showing the release of lysozyme from the poloxamer/poly(acrylic acid) polymer complex of the invention;

Figure 19 is a plot showing release of insulin from a poloxamer/poly(acrylic acid) polymer network composition of the invention;

Figure 20 is a plot of viscosity vs. temperature for a poloxamer/poly(acrylic acid) polymer network composition (a) before and (b) after sterilization by autoclave;

Figure 21 is a plot of viscosity vs. temperature for an oil-free moisturizing formulation prepared from (a) a responsive polymer network composition of the invention and (b) a conventional oil-in-water formulation;

Figure 22 is a plot of equilibrium solubility of estradiol (A, B) and progesterone (C, D) in aqueous solutions (pH 7) of Pluronic® F127 (A, C) and responsive polymer network (B, D) vs. temperature;

Figure 23 is a plot of the ratio of equilibrium solubilities of estradiol in responsive polymer network and water vs. polymer concentration in the responsive polymer network solutions;

Figure 24 is a plot of the effect of loading fluorescein on the onset of gelation of responsive polymer network vs. total polymer concentration in responsive polymer network solution (pH 7.0);

Figure 25 is a plot of the percentage of a) estradiol and b) progesterone release
5 from responsive polymer network vs. time;

Figure 26 is a plot of the rate of progesterone release and macroscopic viscosity vs. polymer concentration;

Figure 27 is a plot of the percentage of progesterone release vs. polymer concentration in responsive polymer network and,

10 Figure 28 is a plot of the relative diffusivity of poly(styrene) latex particles in water and responsive polymer network.

Detailed Description of the Invention

The present invention is directed to a cosmetic composition comprising a
15 cosmetically acceptable carrier comprising a novel poloxamer:poly(acrylic acid) polymer network. The polymer network functions as a temperature sensitive thickening agent, and in addition possesses surfactant and emulsifying capabilities which may be beneficial to the cosmetic composition. The polymer network composition according to the invention includes a poloxamer component randomly
20 bonded to a poly(acrylic acid) component. The two polymer components may interact with one another on a molecular level. The polymer network contains about 0.01-20 wt% each of poloxamer and poly(acrylic acid). Exemplary polymer network compositions range from about 1:10 to about 10:1 poloxamer:poly(acrylic acid). Polymer network gel compositions which exhibit a reversible gelation at body
25 temperature (25-40°C) and/or at physiological pH (ca. pH 3.0-9.0) and even in basic environments up to pH 13 (hair care) are particularly preferred for cosmetic applications.

In one embodiment of the invention, a 1:1 poloxamer:poly(acrylic acid)
polymer network at appropriate pH exhibits flow properties of a liquid at about room
30 temperature, yet rapidly thickens into a gel consistency of at least about five times

greater, preferably at least about 10 times greater, and even more preferably at least about 30 times and up to 100 times greater, viscosity upon increase in temperature of about 10 °C and preferably about 5 °C. The reversibly gelling polymer network of the present invention exhibit gelation even at very low polymer concentrations. For

5 example, polymer network compositions at pH 7 comprising about 0.5 wt% poloxamer component and about 0.5 wt% PAA exhibits a significant increase in viscosity from a free-flowing liquid (50 cps) to a gel (6000 cps). The observed gelation takes place at low solids contents, such as less than 20 wt% or preferably less than about 10 wt%, or more preferably less than about 2.5 wt% or most preferably less than about 0.1 wt%.

10 Thus, only a small amount by weight of the polymer network need be incorporated into a cosmetic composition in order to provide the desired thickening or viscosifying effect.

The reverse viscosification effect at low polymer concentrations provides clear, colorless gels which are particularly well-suited to cosmetic applications. For example,
15 very little residue is formed upon dehydration which may be important in some applications, such as in topically applied cosmetics. An additional advantage of the polymer network of the invention is that it remains clear and translucent above and below the critical temperature or pH. These characteristics of the reversibly gelling polymer network make it well suited for use in cosmetic compositions.

20 The polymer network of the present invention technology may be added to cosmetic formulations to increase the thickness and viscosity of the composition. The poloxamer:poly(acrylic acid) polymer network possesses hydrophobic regions capable of aggregation. Unlike conventional thickeners, the aggregation of the polymer network of the present invention is temperature sensitive. Thus, the inventive polymer
25 network of the present invention may have a transition temperature (i.e. temperature of aggregation) above room temperature so that the cosmetic composition is of low viscosity at or below room temperature and is of high viscosity at or around body temperature (body temperature includes both surface and internal body temperature).
Thus, a composition may be prepared at low temperatures while the polymer network
30 is in a low viscosity state. Mixing of ingredients under low viscosity is expected to be

easier, thus simplifying the manufacturing process. Yet, the resultant mixture would be of increased viscosity at use temperatures. As a further advantage, a cosmetic composition comprising poloxamer:poly(acrylic acid) polymer network may be spread thinly to allow for even application, due to its low viscosity at room temperature, but will thicken and "fill" the skin contours upon warming up to body surface temperature.

In another aspect of the invention, the composition may be applied through a nozzle that provides high shear to reduce viscosity, yet the composition regains its viscosity after application to the skin. This contrasts with conventional formulations which permanently lose viscosity after being subjected to high shear.

In another aspect of the invention, the composition may be formulated and applied as a liquid, spray, semi-solid gel, cream, ointment, lotion, stick, roll-on formulation, mousse, pad-applied formulation, and film-forming formulation.

The poloxamer:poly(acrylic acid) polymer network may also be included in a cosmetic composition for use as a stabilizing, solubilizing or emulsifying agent for a hydrophobic component of the cosmetic formulation. The strong hydrophilic regions of the poloxamer resulting from aggregation and micelle formation create hydrophobic domains which may be used to solubilize and control release of hydrophobic agents. Similar micelle-based systems have been shown to protect trapped peptides against enzymatic degradation from surface enzymes.

The reversibly gelling polymer network of the present invention is a unique polymer composition designed to abruptly change its physical characteristics or the characteristics and properties of materials mixed therewith with a change in temperature. Without intending to be bound by any particular mechanism or chemical structure, it is believed that the structure of the polymer network involves a random bonding of the poloxamer onto the backbone of the poly(acrylic acid). A portion of the poloxamer which is present during the polymerization reaction which forms the poly(acrylic acid) is bonded to the backbone of the forming poly(acrylic acid) through hydrogen abstraction and subsequent reaction. See detailed discussion of the mechanism, below. The combination of the poly(acrylic acid) and randomly bonded poloxamer gives the composition its unique properties. Any free poloxamer remaining

after polymerization of PAA remains associated with the random co-polymer, resulting in a miscible composition. Free poloxamer may also be present in the polymer network composition; however, its presence is not required in order to observe reverse thermal viscosification.

5 The poly(acrylic acid) may be linear, branched and/or crosslinked. Poly(acrylic acid) is capable of ionization with a change in pH of the solution. By ionization, as that term is used with respect to poly(acrylic acid), it is meant the formation of the conjugate base of the acrylic acid, namely acrylate. As used herein, poly(acrylic acid) includes both ionized and non-ionized versions of the polymer. Changes in ionic
10 strength may be accomplished by a change in pH or by a change in salt concentration. The viscosifying effect of the polymer network is partly a function of the ionization of the poly(acrylic acid); however, reverse thermal gelling may occur without ionization. Changes to the ionic state of the polymer causes the polymer to experience attractive (collapsing) or repulsive (expanding) forces. Where there is no need or desire for the
15 composition to be applied in a high viscosity state, it may be possible to prepare the composition as non-ionized poly(acrylic acid). The body's natural buffering ability will adjust the pH of the applied composition to ionize the poly(acrylic acid) and thereby develop its characteristic viscosity.

20 The poloxamer possesses regions of hydrophobic character, e.g., poly(propylene glycol) blocks, and hydrophilic character, e.g., poly(ethylene glycol) blocks. The poloxamer may be linear or branched. Suitable poloxamers include triad block copolymers of poly(ethylene glycol) and poly(propylene glycol) having the general formula $(P_1)_a(P_2)_b(P_1)_a$, where P_1 = poly(ethylene glycol) and P_2 = poly(propylene glycol) blocks, where a is in the range of 10-50 and where b is in the range of 50-70.
25 where poly(propylene glycol) represents the hydrophobic portion of the polymer and poly(ethylene glycol) represents the hydrophilic portion of the polymer. Pluronic® polymers (BASF) are commercially available for a in the range of 16 to 48 and b ranging from 54-62. One or more poloxamers may be used in the reversibly gelling polymer network composition of the present invention.

30 The reversibly gelling responsive polymer networks compositions of the present

invention are highly stable and do not exhibit any phase separation upon standing or upon repeated cycling between a liquid and a gel state. Samples have stood at room temperature for more than three months without any noticeable decomposition, clouding, phase separation or degradation of gelation properties. This is in direct contrast to polymer blends and aqueous mixed polymer solutions, where phase stability and phase separation is a problem, particularly where the constituent polymers are immiscible in one another.

An example of the dramatic increase in viscosity and of the gelation of the reversibly gelling polymer network compositions of the invention is shown in Figure 1. Figure 1 is a graph of viscosity vs. temperature for 1 wt%, 2 wt% and 3 wt% polymer network compositions comprising 1:1 poloxamer:poly(acrylic acid), hydrated and neutralized. The viscosity measurements were taken on a Brookfield viscometer at a shear rate of 0.44 sec^{-1} at pH 7.0. All solutions had an initial viscosity of about 1080 cP and exhibited a dramatic increase in viscosity to gel point at about 35°C . This is not typical of all polymer network compositions since polymerization condition will affect initial viscosity. Final viscosities were approximately 33,000 cP, 100,000 cP and 155,000 cP for the 1 wt%, 2 wt% and 3 wt% compositions, respectively. This represents viscosity increases of about 30-, 90- and 140-fold, respectively. This effect is entirely reversible. Upon cooling, the composition regains its initial viscosity. This is demonstrated in Figure 2, where a 1 wt% poloxamer:poly(acrylic acid) composition is warmed through the transition temperature up to 35°C (simple curve), cooled to room temperature (24°C , ticked curve) and then warmed again to up above the transition temperature (open box curve). The viscosity response was virtually identical in all three instances.

As would be expected with a non-Newtonian system, the solution viscosity differs with different shear rates. Figure 3 shows the viscosity response of a 2 wt% poloxamer:poly(acrylic acid) polymer composition at various shear rates. The viscosity response is consistent between 24°C and 34°C ; however, the final viscosity is reduced with increasing shear rate.

However, unlike many prior art hydrogels, e.g., carbomers, the

poloxamer:poly(acrylic acid) polymer network composition does not permanently lose viscosity after being subjected to high shear conditions. The poloxamer:poly(acrylic acid) polymer network composition remains unaffected by such shear conditions as homogenization. Figure 4 compares the viscosity response curve of a 2 wt% poloxamer:poly(acrylic acid) polymer composition prepared with nominal mixing (simple lime) and stirring with that of a polymer composition of similar composition prepared using high shear homogenization designated by a ticked line (8000 rpm, 30 min). No significant decrease in viscosity is observed.

A number of factors influence the viscosity and transition temperature of the composition. The more important factors include polymer concentration, pH and presence and nature of additives.

The effect of pH on the viscosity of reversibly gelling polymer networks is shown in Figure 5. Increasing pH from the starting pH has a lesser effect on the viscosity than decreasing the pH. This may relate to the extent of ionization of the poly(acrylic acid) component of the polymer network as discussed above. This may be clearly seen in Figure 5 when comparing the viscosity response of a 1 wt% poloxamer:poly(acrylic acid) polymer composition at pH 5 and pH 11. Satisfactory viscosities can be obtained at high pHs indicating the potential value of the reversibly gelling polymer network in products such as depilatories, hair straighteners and hair relaxers.

The responsive polymer network may also include additives for influencing the performance of the polymer composition, such as the transition temperature and the viscosity of the polymer composition above the transition temperature. The following list is not intended to be exhaustive but rather illustrative of the broad variety of additives which can be used.

These materials include solvents (e.g., 2-propanol, ethanol, acetone, 1,2-pyrrolidinone, N-methylpyrrolidinone), salts (e.g., calcium chloride, sodium chloride, potassium chloride, sodium or potassium phosphates, borate buffers, sodium citrate), preservatives (benzalkonium chloride, phenoxyethanol, sodium hydroxymethylglycinate, ethylparaben, benzoyl alcohol, methylparaben, propylparaben,

butylparaben, Germaben II), humectant/moisturizers (acetamide MEA, lactimide MEA, hydrolyzed collagen, mannitol, panthenol, glycerin), lubricants (hyaluronic acid, mineral oil, PEG-60-lanolin, PPG-12-PEG-50-lanolin, PPG-2 myristyl ether propionate) and surfactants.

5 Surfactants may be divided into three classes: cationic, anionic, and nonionics. An example of a cationic surfactant used is ricinoleamidopropyl ethyldimonium ethosulfate (Lipoquat R). Anionic surfactants include sodium dodecyl sulfate and ether sulfates such as Rhodapex CO-436. Nonionic surfactants include Surfynol CT-111, TG, polyoxyethylene sorbitan fatty acid esters such as Tween 65 and 80, sorbitan fatty
10 acid esters such as Span 65, alkylphenol ethoxylates such as Igepal CO-210 and 430, dimethicone copolyols such as Dow Corning 190, 193, and Silwet L7001.

 The addition of polymers has been studied including xanthan gum, cellulose such as hydroxyethylcellulose (HEC), carbomethoxycellulose (CMC), lauryldimonium hydroxypropyl oxyethyl cellulose (Crodacel QL), hydroxypropylcellulose (HPC), and
15 hydroxypropylmethylcellulose (HPMC), poly(acrylic acid), cyclodextrins, methyl acrylamido propyl triammonium chloride (MAPTAC), polyethylene oxide, polyvinylpyrrolidone, polyvinyl alcohol, and propylene oxide/ethylene oxide random copolymers. Poloxamers may also be used as additives. Examples include both the Pluronic® polyols having an $(P_1)_a(P_2)_b(P_3)_c$ structure such as Pluronic® F38, L44, P65,
20 F68, F88, L92, P103, P104, P105, F108, L122 and F127, as well as the reverse Pluronic® R series $(P_2)_a(P_1)_b(P_3)_c$ structure such as Pluronic® 17R2 and 25R8. Other miscellaneous materials include propylene glycol, urea, triethanolamine, alkylphenol ethoxylates (Iconol series), and linear alcohol alkoxylates (Plurafac series).

 Additives affect the viscosity of the compositions differently depending upon
25 the nature of the additive and its concentration. Some additives will affect the initial or final viscosity, whereas others will affect the temperature range of the viscosity response, or both.

 Potassium chloride and acetamide MEA are two examples of additives which decrease the final viscosity of the composition (see, Example 30). KCl (0.25%) added
30 to a 1 wt% reversibly gelling polymer composition reduces the viscosity by about 3000

cps. See, Figure 6. The humectant, acetamide MEA, lowers the viscosity of a 1 wt% solution by approximately 1,500 cps (see, Figure 7).

Glycerin, ethanol and dimethicone copolymer have been shown to affect the temperature range over which the viscosity response occurs. Glycerin shifts the transition temperature to a slightly lower range from an initial 24-34 °C to about 24-30 °C, but does not affect the final viscosity (see, Example 44). The effect of ethanol on the viscosity is different at different concentration levels. At 5 wt% and 10 wt% added ethanol, the transition temperature is shifted to lower ranges, e.g., 24-29 °C and 20-29 °C, respectively. At 20 wt% added ethanol, the composition not only exhibits a lowering of the transition temperature, but also a marked increase in initial and final viscosity. See, Figure 8. Dimethicone copolymer (1 wt%) also changed the transition temperature, but in this instance the transition temperature range was raised to 28-41 °C. Thus, proper selection of additives permits the formulator to adjust the transition temperature to various ranges.

Those skilled in the art will appreciate that the polymer network compositions of the present invention may be utilized for a wide variety of cosmetic and personal care applications. To prepare a cosmetic composition, an effective amount of cosmetically active agent(s) which imparts the desirable cosmetic effect is incorporated into the reversibly gelling polymer network composition of the present invention. Preferably the selected agent is water soluble, which will readily lend itself to a homogeneous dispersion through out the reversibly gelling polymer network composition; however, the polymer network has been demonstrated to significantly solubilize or suspend hydrophilic agents in order to improve formulation homogeneity (see, Example 36). It is also preferred that the agent(s) is nonreactive with the polymer network composition. For materials which are not water soluble, it is also within the scope of the invention to disperse or suspend powders or oil (lipophilic materials) throughout the polymer network composition. It will also be appreciated that some applications may require a sterile environment. It is contemplated as within the scope of the invention that the reversibly gelling polymer network compositions of the present invention may be prepared under sterile conditions. An additional feature

of the reversibly gelling polymer composition is that is prepared from constituent polymers that have known accepted toxicological profiles.

The poloxamer:poly(acrylic acid) polymer network has been evaluated under Good Laboratory Practice (GLP) standard protocols known in the art for toxicity in animal models and found to exhibit no toxic effects. The results of the toxicity study are summarized in the following Table 1. The non-toxicity of the polymer network makes it an ideal candidate for use in cosmetic compositions.

Table 1. Toxicity data for 6% poloxamer:poly(acrylic acid) solution at pH 7.

Reaction testes	mode of testing	results
Skin sensitization	guinea pig - topical	not a sensitizer
eye irritation	rabbit eye instillation	negative
primary dermal irritation	rabbit - topical	very slight edema (1 on a scale of 1-8)
acute dermal toxicity	rat - single dose (2g/kg)	no toxicity
acute oral toxicity	rat - single dose (5g/kg)	no toxicity
AMES test		negative

Exemplary cosmetic and personal care applications, for which the reversibly gelling polymer network composition may be used include, but are not limited to, baby products, such as baby shampoos, lotions, powders and creams; bath preparations, such as bath oils, tablet and salts, bubble baths, bath fragrances and bath capsules; eye makeup preparations, such as eyebrow pencil, eyeliner, eye shadow, eye lotion, eye makeup remover and mascara; fragrance preparations, such as colognes and toilet waters, powders and sachets; noncoloring hair preparations, such as hair conditioner, hair spray, hair straighteners, permanent waves, rinses shampoos, tonics, dressings and other grooming aids; color cosmetics; hair coloring preparations such as hair dye, hair tints, hair shampoos, hair-color sprays, hair-lighteners and hair bleaches; makeup preparations such as face powders, foundations, leg and body paints, lipstick, makeup bases, rouges and makeup fixatives; manicuring preparations such as basecoats and

undercoats, cuticle softeners, nail creams and lotions, nail extenders, nail polish and enamel, and nail polish and enamel remover; oral hygiene products such as dentrifices and mouthwashes; personal cleanliness, such as bath soaps and detergents, deodorants, douches and feminine hygiene product; shaving preparations such as aftershave lotion, beard softeners, men's talcum, shaving cream, shaving soap and preshave lotions; skin care preparations such as cleansing preparations, skin antiseptics, depilatories, face and neck cleansers, body and hand cleansers, foot powders and sprays, moisturizers, night preparations, paste masks, and skin fresheners; and suntan preparations such as suntan creams, gels and lotions, indoor tanning preparations.

Preparation of the above-named cosmetic compositions and others may be accomplished with reference to any of the cosmetic formulation guidebooks and industry journals which are available in the cosmetic industry. These references supply standard formulations which may be modified by the addition or substitution of the reversible viscosifying polymer network of the present invention into the formulation. Suitable guidebooks include Cosmetics and Toiletries Magazine, Vol. 111 (March, 1996); Formulary: Ideas for Personal Care; Croda, Inc. Parsippany, NJ (1993); and Cosmeticon: Cosmetic Formulary, BASF, which are hereby incorporated in their entirety by reference.

The cosmetic composition may be in any form. Suitable forms include but are not limited to lotions, creams, sticks, roll-ons formulations, mousses, aerosol sprays, pad-applied formulations, and film-forming formulations.

As those skilled in the art will appreciate, the foregoing list is exemplary only. Because the reversibly gelling polymer network composition of the present invention is suited for application under a variety of physiological conditions, a wide variety of cosmetically active agents may be incorporated into and administered from the polymer network composition. In addition to the poloxamer:poly(acrylic acid) polymer network, additional cosmetically acceptable carriers may be included in the composition, such as by way of example only, emollients, surfactants, humectants, powders and other solvents. By way of example only, the cosmetic composition also may include additional components, which serve to provide additional aspects of the

cosmetic affect or to improve the stability and/or administration of the cosmetic. Such additional components include, but are not limited to, preservatives, abrasives, acidulents, antiacne agents, anti-aging agents, antibacterials, anticaking, anticaries agents, anticellulites, antidandruff, antifungal, anti-inflammatories, anti-irritants, antimicrobials, antioxidants, astringents, antiperspirants, antiseptics, antistatic agents, astringents, binders, buffers, additional carriers, chelators, cell stimulants, cleansing agents, conditioners, deodorants, depilatories, detergents, dispersants, emollients, emulsifiers, enzymes, essential oils, exfoliants, fibers, film forming agents, fixatives, foaming agents, foam stabilizers, foam boosters, fungicides, gellants, glosser, hair conditioner, hair set resins, hair sheen agents, hair waving agents, humectants, lubricants, moisture barrier agents, moisturizers, ointment bases, opacifier, plasticizer, polish, polymers, powders, propellant, protein, refatting agents, sequestrant, silicones, skin calming agents, skin cleansers, skin conditioners, skin healing, skin lightening agents, skin protectants, skin smoothing agents, skin softening agents, skin soothing agents, stabilizers, sunscreen agents, surfactants, suspending agents, tanning accelerators, thickeners, vitamins, waxes, wetting agents, liquefiers, colors, flavors and/or fragrances. Suitable materials which serve the additive functions listed here are well known in the cosmetic industry. A listing of the additive function and materials suitable for incorporation into the cosmetic composition may be found in Appendix A, which is appended hereto at the end of the specification. Further information may be obtained by reference to The Cosmetic Bench Handbook, Cosmetics & Toiletries; C.C. Urbano, editor, Allured Publ. Corp., 1996, which is hereby incorporated in its entirety by reference.

A brief description of some preferred additives and cosmetically active agents follows. The compositions of the invention include a safe and effective amount of a cosmetically active agent. "Safe and effective", as it is used herein, means an amount high enough to significantly positively modify the condition to be treated or the cosmetic effect to be obtained, but low enough to avoid serious side effects.

Preservatives can be desirably incorporated into the cosmetic compositions of the invention to protect against the growth of potentially harmful microorganisms.

Suitable preservatives include, but are not limited to, alkyl esters of para-hydroxybenzoic acid, hydantoin derivatives, parabens, propionate salts, triclosan tricarbaniide, tea tree oil, alcohols, farnesol, farnesol acetate, hexachlorophene and quaternary ammonium salts, such as benzolconjure, and a variety of zinc and
5 aluminum salts. Cosmetic chemists are familiar with appropriate preservatives and may select that which provides the required product stability. Preservatives are preferably employed in amounts ranging from about 0.0001% to 2% by weight of the composition.

Emollients can be desirably incorporated into the cosmetic compositions of the
10 invention to provide lubricity to the formulation. Suitable emollients may be in the form of volatile and nonvolatile silicone oil, highly branched hydrocarbons and synthetic esters. Amounts of emollients may be in the range of about 0.1-30 wt%, and preferably about 1-20 wt%. By way of example only, suitable silicones include cyclic or linear polydimethylsiloxanes, polyalkylsiloxanes, polyalkylarylsiloxanes and
15 polyether siloxanes. By way of example only, suitable ester emollients include alkenyl esters of fatty acids, polyhydric alcohols, such as ethylene glycol mono and di-fatty acid esters, polyethylene glycol and the like, ether-esters, such as fatty acid esters of ethoxylated fatty alcohols, wax esters, such as beeswax, spermaceti, myristyl myristate and stearyl stearate, and sterol esters, such as cholesterol fatty acids.

A variety of oily emollients may be employed in the compositions of this
20 invention. These emollients may be selected from one or more of the following classes: 1. Triglyceride esters such as vegetable and animal fats and oils. Examples include castor oil, cocoa butter, safflower oil, cottonseed oil, corn oil, olive oil, cod liver oil, almond oil, avocado oil, palm oil, sesame oil, squalene, Kikui oil and
25 soybean oil; 2. Acetoglyceride esters, such as acetylated monoglycerides; 3. Ethoxylated glycerides, such as ethoxylated glyceryl monostearate; 4. Alkyl esters of fatty acids having 10 to 20 carbon atoms, such as, methyl, isopropyl, and butyl esters of fatty acids, and including hexyl laurate, isohexyl laurate, isohexyl palmitate, isopropyl palmitate, decyl oleate, isodecyl oleate, hexadecyl stearate decyl stearate,
30 isopropyl isostearate, diisopropyl adipate, diisohexyl adipate, dihexyldecyl adipate,

diisopropyl sebacate, lauryl lactate, myristyl lactate, and cetyl lactate; 5. alkenyl esters of fatty acids having 10 to 20 carbon atoms, such as oleyl myristate, oleyl stearate, and oleyl oleate and the like; 6. fatty acids having 10 to 20 carbon atoms, such as pelargonic, lauric, myristic, palmitic, stearic, isostearic, hydroxystearic, oleic, linoleic, ricinoleic, arachidic, behenic, and erucic acids and the like; 7. fatty alcohols having 10 to 20 carbon atoms, such as, lauryl, myristyl, cetyl, hexadecyl, stearyl, isostearyl, hydroxystearyl, oleyl, ricinoleyl, behenyl, erucyl, and 2-octyl dodecanyl alcohols are examples of satisfactory fatty alcohols and the like; 8. fatty alcohol ethers, such as ethoxylated fatty alcohols of 10 to 20 carbon atoms including the lauryl, cetyl, stearyl, isostearyl, oleyl, and cholesterol alcohols. having attached thereto from 1 to 50 ethylene oxide groups or 1 to 50 propylene oxide groups; 9. ether-esters such as fatty acid esters of ethoxylated fatty alcohols; 10. Lanolin and derivatives, such as lanolin, lanolin oil, lanolin wax, lanolin alcohols, lanolin fatty acids, isopropyl lanolate, ethoxylated lanolin, ethoxylated lanolin alcohols, ethoxylated cholesterol, propoxylated lanolin alcohols, acetylated lanolin alcohols, lanolin alcohols linoleate, lanolin alcohols ricinoleate, acetate of lanolin alcohols ricinoleate, acetate of ethoxylated alcohols-esters, hydrogenolysis of lanolin, ethoxylated hydrogenated lanolin, ethoxylated sorbitol lanolin, and liquid and semisolid lanolin absorption bases and the like; 11. polyhydric alcohol esters, such as, ethylene glycol mono and di-fatty acid esters, diethylene glycol mono- and di-fatty acid esters, polyethylene glycol (200-6000) mono- and di-fatty acid esters, propylene glycol mono- and di-fatty acid esters, polypropylene glycol 2000 monooleate, polypropylene glycol 2000 monostearate, ethoxylated propylene glycol monostearate, glyceryl mono- and di-fatty acid esters, polyglycerol polyfatty esters, ethoxylated glyceryl monostearate, 1,2-butylene glycol monostearate, 1,2-butylene glycol distearate, polyoxyethylene polyol fatty acid ester, sorbitan fatty acid esters, and polyoxyethylene sorbitan fatty acid esters are satisfactory polyhydric alcohol esters; 12. wax esters such as beeswax, spermaceti, myristyl myristate, stearyl stearate; 13. beeswax derivatives, e.g. polyoxyethylene sorbitol beeswax; 14. vegetable waxes including carnauba and candelilla waxes; 15. phospholipids such as lecithin and derivatives; 16. sterol including cholesterol and cholesterol fatty acid

esters; 17. amides such as fatty acid amides, ethoxylated fatty acid amides, solid fatty acid alkanolamides.

Humectants may be added to the composition to increase the effectiveness of the emollient, to reduce scaling, to stimulate removal of built-up scale and improve skin feel. By way of example only, suitable humectants include polyhydric alcohols, such as glycerol, polyalkylene glycols, alkylene polyols their derivatives, propylene glycol, dipropylene glycol, polypropylene glycol, polyethylene glycol, sorbitol, hydroxypropyl sorbitol, hexylene glycol, 1,3-butylene glycol, 1,2,6-hexanetriol, ethoxylated glycerol, propoxylated glycerol and the like. The amount of humectant may be in the range of about 0.5-30 wt% and preferably between 1-15 wt%.

In topical skin care applications, a variety of active substances may be advantageously employed. By way of example only suitable active agents which may be incorporated into the cosmetic composition include anti-aging active substances, anti-wrinkle active substances, hydrating or moisturizing or slimming active substances, depigmenting active substances, substances active against free radicals, anti-irritation active substances, sun protective active substances, anti-acne active substances, firming-up active substances, exfoliating active substances, emollient active substances, and active substances for the treating of skin disorders such as dermatitis and the like.

By way of example only, in the case of hydration, one or more moisturizers may be used, such as glycerin or urea, in combination with one or more precursor agents for the biosynthesis of structural proteins, such as hydroxyproline, collagen peptides and the like.

By the way of example only, in case of slimming, at least one ketolytic agent or an alpha-hydroxyacid such a salicylic acid or 5-n-octanoicsalicylic acid may be used in combination with at least on liporegulating agent such as caffeine.

By way of example only, in the case of depigmentation, at least one keratolytic agent is used in combination with a depigmenting agent such as hydroquinone, tyrosinase inhibitor (koscic acid), ascorbic acid, kojic acid and sodium metabisulfite and the like.

By way of example only, in the case of protection against free radical agents, vitamin E (against COO^\cdot radicals), superoxide dismutase (against O_2^\cdot free radicals) and sugar and caffeine (against OH^\cdot free radicals).

By way of example only, in the case of anti-aging, moisturizers, sunscreens, alpha-hydroxyacids, salicylic acid or surface restructuring agents may be used in combination with enzymes for the repair of DNA, vascular protective agents or phospholipids rich in oligoelements and polyunsaturated fatty acids.

By way of example only, in the case of anti-acne agents, keratolytics, such as salicylic acid, sulfur, lactic acid, glycolic, pyruvic acid, urea, resorcinol and N-acetylcysteine, and retinoids, such as retinoic acid and its derivatives may be used.

By way of example only, in the case of anti-inflammation, non-steroidal anti-inflammatory agents (NSAIDS) may be used, such as propionic acid derivatives, acetic acid, fenamic acid derivatives, biphenylcarboxylic acid derivatives, oxicams, including but not limited to aspirin, acetaminophen, ibuprofen, naproxen, benoxaprofen, flurbiprofen, fenbufen, ketoprofen, indoprofen, piroprofen, carprofen, and bucloxic acid and the like.

By way of example only, in the case of antibiotics and antimicrobials may be included in the composition of the invention. Antimicrobial drugs preferred for inclusion in compositions of the present invention include salts of β -lactam drugs, quinolone drugs, ciprofloxacin, norfloxacin, tetracycline, erythromycin, amikacin, triclosan, doxycycline, capreomycin, chlorhexidine, chlortetracycline, oxytetracycline, clindamycin, ethambutol, hexamidine isethionate, metronidazole, pentamidine, gentamicin, kanamycin, lineomycin, methacycline, methenamine, minocycline, neomycin, netilmicin, paromomycin, streptomycin, tobramycin, miconazole and amantadine and the like.

By way of example only, in the case of sunscreen protection, suitable agents include 2-ethylhexyl p-methoxycinnamate, 2-ethylhexyl N,N-dimethyl-p-aminobenzoate, p-aminobenzoic acid, 2-phenyl p-methoxycinnamate, 2-ethylhexyl octocrylene, oxybenzone, homomenthyl salicylate, octyl salicylate, 4,4'-methoxy-t-butylidibenzoylmethane, 4-isopropyl dibenzoylmethane, 3-benzylidene camphor, 3-(4-

methylbenzylidene) camphor, titanium dioxide, zinc oxide, silica, iron oxide, and mixtures thereof and the like. The sunscreens disclosed therein have, in a single molecule, two distinct chromophore moieties which exhibit different ultra-violet radiation absorption spectra. One of the chromophore moieties absorbs predominantly in the UVB radiation range and the other absorbs strongly in the UVA radiation range. These sunscreens provide higher efficacy, broader UV absorption, lower skin penetration and longer lasting efficacy relative to conventional sunscreens. Generally, the sunscreens can comprise from about 0.5% to about 20% of the compositions useful herein. Exact amounts will vary depending upon the sunscreen chosen and the desired Sun Protection Factor (SPF). SPF is a commonly used measure of photoprotection of a sunscreen against erythema.

By way of example only, in the case of sunless tanning agents include, dihydroxyacetone, glyceraldehyde, indoles and their derivatives, and the like.

The composition may include cleansing surfactants. Cleansing surfactants are cationic, anionic, amphoteric or non-ionic surfactants which are water-soluble and produce a consumer-acceptable amount of foam. Nonionic surfactants are well-known materials and have been used in cleansing compositions. Therefore, suitable nonionic surfactants include, but are not limited to, compounds in the classes known as alkanolamides, block copolymers of ethylene and propylene, ethoxylated alcohols, ethoxylated alkylphenols, alkyl polyglycosides and mixtures thereof. In particular, the nonionic surfactant can be an ethoxylated alkylphenol, i.e., a condensation product of an alkylphenol having an alkyl group containing from about 6 to about 12 carbon atoms in either a straight chain or branched chain configuration with ethylene oxide, the ethylene oxide being present in an amount equal to at least about 8 moles ethylene oxide per mole of alkylphenol. Examples of compounds of this type include nonylphenol condensed with about 9.5 moles of ethylene oxide per mole of phenol; dodecylphenol condensed with about 12 moles of ethylene oxide per mole of phenol; dinonylphenol condensed with about 15 moles of ethylene oxide per mole of phenol; octylphenol condensed with about ten moles of ethylene oxide per mole of phenol; and diisooctyl phenol condensed with about 15 moles of ethylene oxide per mole of

phenol.

A wide variety of acids, bases, buffers, and sequestrants can be utilized to adjust and/or maintain the pH and ionic strength of the compositions useful in the instant invention. Materials useful for adjusting and/or maintaining the pH and/or the ionic strength include sodium carbonate, sodium hydroxide, hydrochloric acid, phosphoric acid, sulfuric acid, acetic acid, sodium acetate, sodium hydrogen phosphate, sodium dihydrogen phosphate, citric acid, sodium citrate, sodium bicarbonate, triethanolamine, EDTA, disodium EDTA, tetrasodium EDTA, and the like.

The polymer network may be useful as a solubilization agent in cosmetic and personal care applications. A self-assembling system comprising the reversibly gelling polymer network exhibits thermogelation, pH sensitivity, and the ability to solubilize hydrophobic agents in aqueous media. When poloxamer is copolymerized with poly(acrylic acid) (PAA) according to the invention, the resulting copolymer network is bioadhesive and can be applied in a number of therapies. The materials described in this invention combine "reverse" thermoviscosification mucoadhesion, solubilization of hydrophobic and difficult to manage moieties, easy formulation, and protection of agents from degradation to provide a superior medium for cosmetic and personal care products.

The reversible viscosification of the polymer network at elevated temperatures makes the materials ideal for use as thickening agents in cosmetic and personal care products at any temperature above the transition. Another use of the "thickening" of solutions containing the polymer network as a thickener supplement in emulsions. Currently emulsifiers are often negatively effected by increased temperatures. An additive with reverse thermal viscosification properties, however, would react in exactly the opposite way, increasing its ability to emulsify as it gained three-dimensional structure upon heating above its transition temperature.

In the applications where the reversibly gelling polymer composition can act as a surfactant, the polymer network will have the ability to act as a primary emulsifier without any (or with very little) addition of traditional surfactant. The responsive polymer network will also act as a stabilizer for oil-soluble ingredients that would

conventionally need to be solubilized by oils in formulation. The hydrophobic portion of the polymer network (PPO) forms domains which act as reservoirs for an oil-soluble or hydrophobic additive, such as an oil droplet, as is illustrated in Figure 9. These two features of the material of the invention would enable it to be used as a base in a cosmetic formulation that would be non-greasy due to lack of oils, such as petrolatum and mineral oil. The increase in viscosity above the transition temperature adds structure and yield value to the water phase and results in a highly stable emulsion.

Thus, poloxamer:poly(acrylic acid) polymer network compositions are valuable materials in the formulation of cosmetic and personal care products. In particular, they may be useful as rheology modifiers, provide a cushioning effect on the skin, offer barrier properties and controlled release of actives. In addition, the polymer composition may serve as a surfactant and is compatible with most ingredients used in the cosmetic industry.

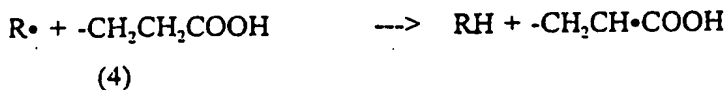
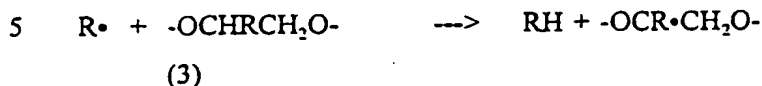
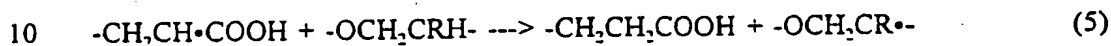
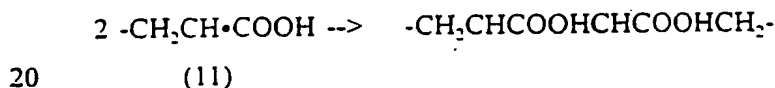
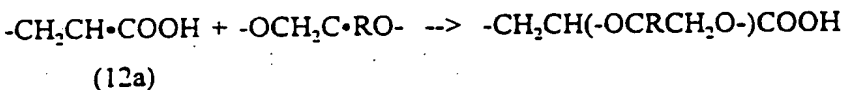
The above properties of the poloxamer:poly(acrylic acid) polymer network provides a cosmetic composition that spreads evenly and smoothly and which leaves a lubricious feel to the skin. A sensory evaluation was conducted with seven random volunteers in order to determine the sensory effect of a cream formulation on the skin. An oil-free cosmetic formulation was prepared substantially as set forth in Example 33(b) and was compared to Nivea Oil Free, a product of Beiersdorf of Germany. Volunteers placed unmarked samples on the skin and evaluated the formulation based upon its feel and texture. The samples were rated on a scale of 1 (bad) to 5 (good). The oil-free cosmetic formulation of the present invention scored equally to the Nivea Oil Free moisturizing product. Both samples scored a 3.5 on the rating scale.

The observed thermal behavior of the reversibly gelling polymer network suggests that the increase in viscosity is due to aggregation of the hydrophobic portion of the poloxamer at the transition temperature which, because of bonding with the poly(acrylic acid) component, serve as temporary cross-links which physically bridge adjacent chains of poly(acrylic acid) to provide a viscous gel-like extended polymer structure. The aggregation process may be understood as occurring as shown in Figure

10, in which a backbone 20 represent poly(acrylic acid), a thin band 24 represents the hydrophobic poly(propylene) glycol region of the poloxamer and a thick band 26 represents the hydrophilic poly(ethylene glycol) region of the poloxamer. Below the transition temperature, the polymer network is randomly arranged, as is shown in Figure 10(a). At or above the transition temperature, the hydrophobic regions 24 associate to form aggregations or micelles 28, as is shown in Figure 10(b). The association increases the effective molecular weight of the polymer network composition with the corresponding increase in viscosity.

A general method of making the poloxamer:PAA polymer network compositions of the present invention comprises solubilization of the poloxamer in acrylic acid monomer, followed by polymerization of the monomer to PAA. Polymerization may be accomplished by addition of a polymerization initiator or by irradiation techniques. The initiator may be a free radical initiator, such as chemical free radical initiators and uv or gamma radiation initiators. Conventional free radical initiators may be used according to the invention, including, but in no way limited to ammonium persulfate, benzoin ethyl ether, benzyl peroxide, 1,2'-azobis(2,4-dimethylpentanitrile) (Vazo 52) and azobisisobutyronitrile (AIBN). Initiation may also be accomplished using cationic or ionic initiators. Many variations of this methods will be apparent to one skilled in the art and are contemplated as within the scope of the invention. For example, the poloxamer component may be dissolved in an acrylic acid/water mixture instead of pure monomer. It may be desirable to remove unreacted monomer and/or free poloxamer from the resultant polymer network. This may be accomplished using conventional techniques, such as, by way of example, dialysis or sohxlet extraction.

Without intending to be bound by a particular mechanism or structure, the following scheme represents a possible chemical mechanism for the formation of the system here described. These mechanisms are presented by way of explanation and are no way limiting of the invention. It is contemplated that these or other mechanistic routes may in fact occur in the formation of the polymer network of the present invention.

I. InitiationII. Hydrogen AbstractionIII. Chain TransferIV. PropagationV. Side Chain Branching Off AA BackboneVI. AA Branching off Poloxamer BackboneVII. Homogenous TerminationVIII. Heterogenous Termination with bonding of Pluronic to PAA

The scheme for bonding of poloxamer to acrylic acid may involve initiation (eq 1), hydrogen abstraction from the propylene or ethylene moiety of the poloxamer (eq 3), and attachment to acrylic acid via addition across the unsaturated bond (eq 10). Propagation (eq 8) leads to the final PAA.

Alternatively, the mechanism may proceed by initiation according to eqs. (1) and (2), propagation to form PAA (eq.8), a chain transfer reaction to generate a reactive poloxamer moiety (eq. 5), followed by addition of the reactive poloxamer

moiety to the unsaturated bond of acrylic acid (eq. 10) and subsequent propagation of the PAA chain.

Thus the polymer network may include a plurality of poly(acrylic acid)) units bonded to a single poloxamer unit or, alternatively, a plurality of poloxamer units bound to a single PAA backbone. Combinations of these alternatives are also a possibility.

Reverse phase polymerization may be used to prepare polymer network beads by dispersion of the poloxamer and acrylic acid monomer mixture in a nonpolar solvent such as hexane or heptane. The aggregating polymer/monomer solution is dispersed with agitation in the nonpolar solvent in order to suspend droplets of the solution. Polymerization of the monomer is initiated by conventional means (i.e., addition of a initiator or irradiation) in order to polymerize the monomer and form responsive polymer network beads. See, U.S.S.N. 08/276,532 filed July 18, 1995 and entitled "Useful Responsive Polymer Gel Beads" for further information on the preparation of polymer gel beads, herein incorporated by reference. Such a method may be particularly desirable to provide a heat sink for the heat generated in the exothermic polymerization reaction.

The polymer network complexes and aqueous gelling solutions of the present invention may be understood with reference to the following examples, which are provided for the purposes of illustration and which are in no way limiting of the invention.

Example 1 This example describes the synthesis of a polymer network and an aqueous responsive polymer network solution prepared using a triblock polymer of poly(ethylene glycol) and poly(propylene glycol), Pluronic® F27 polyol, and poly(acrylic acid). This example also characterizes the gelation and the physical properties of the resultant polymer network.

Synthesis. Block copolymer of poly(propylene glycol) (PPG) and poly(ethylene glycol) (PEG) having triad ABA structure $(\text{PEG})_A(\text{PPG})_B(\text{PEG})_A$ (Pluronic® F127 NF polyol, Poloxamer 407 NF polyol, where "F" means Flakes, "12" means 12X300=3600 - MW of the PPG section of the block copolymer, "7" PEG in

the copolymer is 70 wt%, and nominal molecular weight is 12,600) from BASF (3.0 g) was dissolved in 3.0 g acrylic acid (Aldrich). This represents a substantially 1:1 weight ratio of Pluronic® F127 polyol and poly(acrylic acid). The solution was deaerated by N₂ bubbling for 0.5 h and following addition of 100 ml of freshly prepared saturated solution of ammonium persulfate (Kodak) in deionized water was kept at 70 °C for 16 h resulting in a transparent polymer.

Viscosity measurements. A known amount of the resultant polymer was suspended in 100 ml deionized water into which NaOH was added. Following swelling for 3 days while stirring, the pH of the resulting fine suspension was adjusted to 7. Samples of 15 ml each were taken, and pH in each vial was adjusted to desired value by addition of 1 M HCl or NaOH. Samples were then kept overnight and their viscosities were measured at different temperatures using Brookfield viscometer using either an SC4-18 or an SC4-25 spindle.

A control experiment was done with a physical blend of Pluronic® F127 polyol and poly(acrylic acid) (MW 450,000) available from Aldrich. Pluronic® F127 polyol and poly(acrylic acid) were dissolved together in deionized water at 1 wt% total polymer concentration and the resultant solution was adjusted to pH 7, stirred and kept in refrigerator. The responsiveness of the polymer network composition and the physical blend to temperature and pH is illustrated in Figs. 1, 11 and 12. Figs. 1 and 2 clearly demonstrate that the synthetic route outlined above resulted in a polymer network system that is sensitive to pH and temperature of the environment. Note that the liquid-gel transition is very sharp, occurring over a very small temperature change or pH (see, Figure 11). Figure 12 is a viscosity vs. temperature graph comparing the gelling characteristics of the responsive polymer network composition and the physical blend. The blend prepared by physically mixing of the triblock PEG/PPG/PEG polymer and poly(acrylic acid) did not exhibit viscosifying effect either as a function of temperature or pH.

It was generally observed that 0.5-5 wt% polymer network compositions made of Pluronic® F127 polyol and poly(acrylic acid) viscosify at temperatures of around 30 °C and higher if pH is adjusted to 6 or higher. The gelling effect was observed in

polymer network compositions standing 3 months or longer. Repeated heating and cooling of responsive polymer network compositions did not cause deterioration of the polymer network or the gelling effect. Solutions of either Pluronic® F127 polyol or poly(acrylic acid) (1-5 w% in water, adjusted to pH 6 or higher) or physical blends of the two lacked the reverse thermal gelling effects found for polymer network compositions.

Example 2. This example describes a standard operating procedure for the manufacture of the reversible gelling polymer network.

The procedure is based upon a 50 liter production. A NaOH solution was prepared by dissolving 131.8 g NaOH pellets in 131.8 mL DI water (50% solution). The NaOH was allowed to dissolve completely. The NaOH solution will be used to convert a percentage of the acrylic acid to sodium acrylate in situ. Acrylic acid monomer (4 kg) is charged into a monomer feed tank and agitated at 250 rpm. NaOH is added slowly. The precipitate formed as the acrylic acid is neutralized to sodium acrylate is allowed to dissolve. Pluronic® F127 (3.5 kg) is slowly added to the monomer feed tank. Pluronic® F127 is dissolved under continued agitation. Norpar 12 (a refined C-12 alkane) is added to the reaction vessel (37 L). The mixture is agitated at 100 rpm. Stabilizer solution of Ganex V-126 is prepared in 2L Norpar 12 and added to the reactor under agitation.

A reaction vessel was degassed using a nitrogen sparge introduced from the bottom of reactor and was continued throughout the reaction. Initiator (13.63 g Lauryl peroxide and 4.23 g Vazo 52 in 0.7 kg acrylic acid monomer) is introduced into the monomer solution. The monomer solution was transferred to the reaction vessel. Agitation was increased to 150 rpm. Nitrogen sparging continued for an additional 20 minutes and then heating began. Heating began at a rate of 0.5-1.0 °C/min up to 75 °C. The reaction began to exotherm at about 45-50 °C and is allowed to continue without cooling until a maximum is reached. It is then cooled to 75 °C using forced cooling. The reaction continued for 12 hours and was then cooled to 35 °C. The slurry was transferred into pails and the polymer beads were allowed to settle.

The slurry was filtered through Buchner Funnels with filter paper (11 µm pore

size) until the bulk of the Norpar had been removed from the beads. The beads were washed three times with heptane. The filtered beads were transferred to a Pyrex drying tray and spread on the tray in a uniform layer. The beads were dried under vacuum for 4 hours at 40-50 °C. The dried beads were analyzed as follows.

5 Elemental analysis. The elemental analysis was performed by Quantitative Technologies, Inc., Whitehouse, NJ using a Perkin Elmer 2400 CHN Elemental Analyzer. Analysis provided C (52.49%), H (7.50%), N (< 0.05%), the balance assumed to be oxygen (39.96%).

10 Thermal Gravimetric Analysis (TGA). The TGA method was performed by Massachusetts Material Research, Inc., West Boylston, MA using a Dupont TGA model 295. The assay was run using a temperature ramp from 30 to 500 °C/min. The resolution for the system was set to 4 (1.0 °C/min for all slope changes). The data was analyzed using the first derivative of the curve and using maxima and minima to mark transitions. The moisture content was also calculated in this manner. The first
15 derivative yielded three maxima. The first transition (moisture) was 3.0% by weight. the second transition was 14.0% by weight and the third was 67.02% by weight. Residue (15.98% remained).

20 Molecular weight determination by gel permeation chromatography (GPC). The molecular weight was determined by GPC on a Hewlett Packard 1100 Liquid Chromatography system with a Viscotech T60 Triple Detector system. Three Waters Ultrahydrogel columns, 1000, 500 and 250 Å, were used for the separation. The
25 mobile phase was 0.1M NaNO₃ and 0.01M K₂HPO₄ salt solution, pH adjusted with phosphoric acid to a pH of 8.0 ± 0.1. The flow rate for the separation was 0.9 mL/min. The column temperature was maintained at 15 °C. The injection volume for the assay was 50 µL. A PEG molecular weight standard of 23,000 Daltons was used to align the detectors. The result for the assay were:

M_n : 341,700 Daltons

M_p : 1,607,000 Daltons

M_w : 2,996,000 Daltons

30 Free poloxamer determination by GPC. The amount of free (unbound)

poloxamer in the polymer matrix was determined using the above GPC method and comparing the poloxamer peaks to that of a standard poloxamer solution. The typical result is approximately 18-22% free poloxamer by weight.

The effect of both the bonded and non-bonded poloxamer on the gelation properties of the responsive polymer network has been determined by extraction of the non-bonded poloxamer from the material. Such extraction studies have established that the graft co-polymer alone exhibits the characteristic reverse thermal gelation of the composition; however, the presence of non-bonded poloxamer component modulates the gelation process. The non-bonded poloxamer component can affect the temperature of transition (from liquid to gel) and the degree of transition and assists in a more controlled and reproducible transition.

Bound poloxamer determination by ethylene oxide (EO) titration. The EO titration was performed as follows. A 5 gm sample of the product polymer was extracted in dichloroethane for three hours at reflux temperatures. The solid is removed and dried under a vacuum for 12 hours at room temperature. The dry material is then analyzed using ASTM method D 2959-95, "Standard Test Method for Ethylene Oxide Content". The amount of EO in the sample is related to the amount of poloxamer bound to the polymer. The typical result is approximately 15 % by weight of EO.

The relative amount of free poloxamer may be varied dependent upon the relative proportions of starting materials and the method of polymerization. Although the residual solids presumably contain only poloxamer which is bonded to the poly(acrylic acid), i.e., a graft co-polymer, the material still shows strong viscosification when it is neutralized and dissolved in water. However, the temperature of viscosification is increased substantially and the degree of viscosification per gram of total solids is increased by removal of free poloxamer. Thus, the free poloxamer plays a role in modifying the extent and temperature of viscosification. ~~The poloxamer undergoes conformational changes and changes to the critical micelle concentration as a function of temperature. The poloxamer will change from an open, non-aggregated form to a micellular, aggregated form with~~

changes in temperature.

Residual acrylic monomer determination by gas chromatography (GC). The residual acrylic acid monomer was determined by GC analysis using a Hewlet Packard GC 5890A, using a HP-FFDAP-TPA 10 m x 0.53 mm x 1 μ m column. The sample was extracted and run in methanol. Using an internal standard ratio, the sample was compared to a one point calibration. The typical results for this assay were below 70 ppm acrylic acid monomer.

Residual Norpar solvent by GC. The residual Norpar in the sample was determined by GC using the above method and comparing the Norpar peaks to that of a standard. The typical results were below 1.5 wt%.

UV-vis spectrum. Optical clarity data of UV-vis spectrophotometer was obtained. A 1.0% solution in water was prepared and measured at 420 nm. Transmittance (%) was typically greater than 90%.

Differential scanning calorimetry (DSC). The DSC was performed by Massachusetts Material Research, Inc., West Boylston, MA using a temperature ramp from 30 to 350 °C at 5 °C/min. The resolution for the system was set to 4 (1.0°C/min for all slope changes). The assay yielded one endothermic event at 265 °C, typically 270 J/g.

Examples 3-9. This example describes the synthesis of a several reversible thermal gelling polymer network prepared using a variety of poloxamers and poly(acrylic acid). The gelation and the physical properties of the resultant polymer network compositions are reported in Table 2.

Table 2.

example	poloxamer	poloxamer composition	polox- amer: PAA	trans. temp.	comments
3	Pluronic® F88 Prill polyol	2400 MW PPG; 80 wt% PEG; nominal MW 11,400	1:1	48 °C	viscosity response curve shown in Figure 13
4	Pluronic® F127 NF polyol	3600 MW PPG; 70 wt% PEG; nominal MW 12,600	1:1	30 °C	pentaerythritol triallyl ether crosslink agent used
5	Pluronic® P104 polyol	3000 MW PPG; 40 wt% PEG; nominal MW 5,900	1:1	28 °C	viscosity response curve shown in Figure 14
6	Pluronic® P123 polyol	3600 MW PPG; 30 wt% PEG; nominal MW 5,750	1:1	25 °C	viscosity response curve shown in Figure 15
7	Pluronic® F127/Pluronic® F108 polyol blend (1:1)	as above	1:1.7	42 °C	polymer solid formed, dried; resolubilized in neutralizing solution
8	Pluronic® F88 polyol	as above	1:1.7	80 °C	polymer solid formed, dried; resolubilized in neutralizing solution
9	Pluronic® F127/Pluronic® F88 polyol blend (1:1)	as above	1:1.7	85 °C	polymer solid formed, dried; resolubilized in neutralizing solution

Example 10. The following example demonstrates the effect of hydrophilic/hydrophobic ratio on the gelling temperature. Polymer network compositions were prepared from the following poloxamers shown in Table 3.

Table 3. Composition of poloxamers investigated.

triblock polyol polymer composition	MW of PPG block	wt% of PEG block
PI03 (PEG) ₃₇ (PPG) ₅₆ (PEG) ₃₇	3250	50
PI04 (PEG) ₂₅ (PPG) ₅₆ (PEG) ₂₅	3250	40
PI05 (PEG) ₁₆ (PPG) ₅₆ (PEG) ₁₆	3250	30

Table 3 shows that in this series, the fraction of PEG is reduced when the molecular weight of the PPG block is kept constant. Linse (*Macromol.* 26:4437-4449 (1993)) report phase diagrams for these copolymers in water were calculated and it was shown that two-phase boundaries corresponding to the beginning of aggregation are almost unaffected by the molecular mass, given a constant PEG/PPG ratio, whereas these boundaries shifted to lower temperature as the PEG content of the polymer is reduced at constant mass. The strong dependence of the PEG/PPG ratio is a consequence of the differing solubilities of PEG and PPG in water at the elevated temperatures. Thus one would suppose that aggregation that causes viscosification in the responsive polymer network composition should shift to lower temperature as PEG fraction decreases.

The poloxamer (3.0 g) was dissolved in 3.0 g acrylic acid. The solution was deaerated by N₂ bubbling for 20 min. and following addition of the 100 :1 of freshly prepared saturated solution of ammonium persulfate in deionized water was kept at 70°C for 16 h resulting in a strong whitish polymer. A sample of the polymer obtained (0.4 g) was suspended in 40 ml deionized water into which NaOH was added. Suspended responsive polymer network particles were allowed to dissolve under constant stirring. The resulting 1 wt% polymer network solutions were subjected to the viscosity measurement at shear rate of 132 or 13.2 sec⁻¹ using a SC4-18 spindle. It can be seen from Figure 16 that, firstly, viscosity of the 1 wt%

responsive polymer network solutions before viscosification (at 20-24°C) decreases in the series $(\text{PEG})_{37}(\text{PPG})_{56}(\text{PEG})_{37}(\text{F103}) > (\text{PEG})_{25}(\text{PPG})_{56}(\text{PEG})_{25}(\text{F104}) > (\text{PEG})_{16}(\text{PPG})_{56}(\text{PEG})_{16}(\text{F105})$ and, secondly, the temperature at which gelation shifts from about 45°C for $(\text{PEG})_{37}(\text{PPG})_{56}(\text{PEG})_{37}$ to about 35°C for $(\text{PEG})_{25}(\text{PPG})_{56}(\text{PEG})_{25}$ and $(\text{PEG})_{16}(\text{PPG})_{56}(\text{PEG})_{16}$. Both results are in excellent agreement with the theory set forth in Linse.

Example 11. The following example is related to release of an active agent from a poloxamer:poly(acrylic acid) polymer network. Drug loading and kinetics of release of the protein hemoglobin from poloxamer:poly(acrylic acid) polymer network is described.

Synthesis. Pluronic® F127 (3.0 g) was dissolved in 3.0 g acrylic acid. The solution was deaerated by N₂ bubbling for 0.5 h and following addition of 100 Fl of freshly prepared saturated solution of ammonium persulfate (Kodak) in deionized water was kept at 70°C for 16 h resulting in a transparent polymer. The resultant responsive polymer network obtained (5 g) was suspended in 95 ml deionized water into which NaOH was added. The resulting suspension was allowed to swell for 7 days.

Hemoglobin loading and release. A 5 wt% responsive polymer network composition (3 g) was allowed to swell for 16 h in 10 ml of 0.25 mg/ml solution of human hemoglobin (Sigma) in deionized water adjusted to pH 8. The resulting mixture was well shaken and placed into the feed chambers of customized vertical, static, Franz-like diffusion cells made of Teflon. The feed and receiver chambers of the diffusion cells were separated by mesh screens (# 2063). The receiver chamber was continuously stirred by a magnetic bar. The cells were allowed to equilibrate to either 25 or 37°C (in an oven). The feed and receiver phases consisted of 1 g of the hemoglobin-loaded responsive polymer network and 6 ml of phosphate-buffered saline (pH 7.4), respectively. In the control experiment, the feed phase was made of 1 g of 0.25 mg/ml-hemoglobin solution. After the feed solution had been loaded into the cell, the kinetic time commenced. Samples of the receiver phase were withdrawn from time to time and their absorbance was measured spectrophotometrically at 400 nm.

To calculate hemoglobin concentrations, corresponding calibration curves (absorbance in PBS versus hemoglobin concentration) were generated. The results of the kinetic experiment are presented in Figure 17. It can be seen that the rate of hemoglobin release from the polymer network was substantially lowered at 37°C when compared to that at 25°C, because of viscosity increase in the polymer network at elevated temperatures (see Figure 1). The protein released from the polymer network composition still retained its native structure, as was determined by comparison of uv-vis spectra of release hemoglobin and natural hemoglobin.

Example 12. The following example is related to release of an active agent from a poloxamer:poly(acrylic acid) polymer network. Drug loading and kinetics of release of the protein lysozyme from a polymer network is reported.

Lysozyme loading and release. A 5 wt% responsive polymer network composition (3 g) was allowed to swell for 16 h in 10 ml of 1 mg/ml solution of chicken egg-white lysozyme (Sigma) and 1.5 mg/ml sodium dodecyl sulfate (Aldrich) in deionized water adjusted to pH 8.5. The resulting mixture was well shaken and placed into the feed chambers of customized vertical, static, Franz-like diffusion cells made of Teflon. The feed and receiver chambers of the diffusion cells were separated by mesh screens (# 2063). The receiver chamber was continuously stirred by a magnetic bar. The cells were allowed to equilibrate to either 25 or 37°C (in an oven). The feed and receiver phases consisted of 1 g of the lysozyme-loaded responsive polymer network and 6 ml of phosphate-buffered saline (pH 7.4), respectively. In the control experiment, the feed phase was made of 1 g of 1 mg/ml lysozyme solution. After the feed solution had been loaded into the cell, the kinetic time commenced. Samples were withdrawn and their absorbance measured spectrophotometrically at 280 nm. A calibration curve was prepared for lysozyme concentration ranging from 0 mg/ml to 0.5 mg/ml in phosphate buffered saline. The results of the kinetic experiment are presented in Figure 18. It can be seen that the rate of lysozyme release from the responsive polymer network composition was substantially lowered at 37°C when compared to that at 25°C, because of viscosity increase in responsive polymer network at elevated temperatures (see Figure 1).

In order to demonstrate the retention of the enzymatic activity of lysozyme, the lysozyme released from the responsive polymer network composition was assayed using *Micrococcus lysodeikticus* cells and compared to that of original lysozyme. The enzymatic activity of lysozyme was the same, within the error of the assay (15%), as that of the original lysozyme. Control without lysozyme in presence of sodium dodecyl sulfate did not show any appreciable lysis of the cells.

Example 13. The following example is related to release of an active agent from a poloxamer:poly(acrylic acid) polymer network. Drug loading and kinetics of release of insulin from a responsive polymer network composition is reported.

Insulin loading and release. A 5 wt% responsive polymer network composition (3 g) was allowed to swell for 16 h in 10 ml of 5 mg/ml solution of bovine Zn^{2+} -insulin (Sigma) in deionized water adjusted to pH 7. The resulting mixture was well shaken and placed into the feed chambers of customized vertical, static, Franz-like diffusion cells made of Teflon. The feed and receiver chambers of the diffusion cells were separated by mesh screens (# 2063). The receiver chamber was continuously stirred by a magnetic bar. The cells were allowed to equilibrate to either 25 or 37°C (in an oven). The feed and receiver phases consisted of 1 g of the insulin-loaded responsive polymer network and 6 ml of phosphate-buffered saline (pH 7.4), respectively. In the control experiment, the feed phase was made of 1 g of 5 mg/ml insulin solution. After the feed solution had been loaded into the cell, the timing commenced. Samples were withdrawn and their absorbance was measured spectrophotometrically at 280 nm. A calibration curve was prepared for insulin concentration ranging from 0 mg/ml to 1.25 mg/ml in phosphate buffered saline. The results of the kinetic experiment are presented in Figure 19. The rate of insulin release from responsive polymer network was substantially lowered at 37°C when compared to that at 25°C, because of viscosity increase in responsive polymer network at elevated temperatures (see Figure 1).

Example 14. This example demonstrates the preparation of a sterile reversibly gelling polymer network aqueous composition and the stability of the composition to sterilization. The polymer network is prepared as described in Example 1, except that

the composition is prepared at 2 wt% Pluronic® F127 polyol/poly(acrylic acid). After dissolution of the 2 wt% polymer network in water, the viscosity is measured. The composition then is sterilized by autoclaving at 121°C, 16 psi for 30 minutes.

Viscosity is determined after sterilization. The corresponding curves for viscosity (a)

5 before and (b) after sterilization are shown in Figure 20 and establish that minimal change in the viscosity profile of the material has occurred with sterilization.

Examples 15-30. These examples show additives which may be used to affect the transition temperature overall viscosification of the polymer network composition.

10 A 1 wt% polymer network was prepared in deionized water at pH 7 in which a variety of additives were included in the composition. The effect of the additive was determined by generation of a Brookfield viscosification curve. Results are reported in Table 4.

Table 4.

Example No.	Additive (wt%)	Effect of additive on:	
		transition temp. (°C)	final viscosity (% change)
15	1,2-methyl pyrrolidone (5)	I (1.8)	N
16	Rhodapex CO-436 (2)	I (1.6)	N
17	Dow Corning 190 (2)	I (5)	I (150)
18	isopropyl alcohol (0.5)	I (3.1)	I (45)
19	Pluronic® L122 (1)	D (4.4)	D (13)
20	Pluronic® F88 (1)	N	I (41)
21	Tween 80 (0.5)	N	I (18)
22	Germaben® II (1)	D (9)	I (100)
23	Iconol NP-6 (1)	D (9)	I (500)
24	Plurafac C-17 (0.5)	I (5.2)	D (36)
25	Dow Corning 193 (0.75)	I (4.1)	D (12)
26	glycerin (5)	D (2)	N
27	UC 50-HB- 170/EO/PO random copolymer (0.5)	N	N
28	PVP K15 (1)	N	N
29	MAPTAC (1)	N	D (8)
30	potassium chloride (0.25)	N	D (34)

I = increase; D = decrease; and N = no change

Example 31. Because of the surfactant nature of the polymer network composition coupled with the gelation effect of the polymer network composition, it is possible to prepare formulation which are 100% water-based, but which are lubricous and thick.

5 Formulations including a nonionic surfactant formulation: An O/W (oil-in-water) emulsion was made by combining the following ingredients utilizing conventional mixing techniques:

Table 5.

Ingredient	% w/w
10 % wt. 1:1 responsive polymer network as prepared in Example 1	20.0
Emulsifying Wax NF ¹	2.5
Mineral Oil	5.0

¹ Polowax available from Croda

Into a vessel equipped with a high efficiency homogenizer, the formula amount of all ingredients is added, water is added to 100% w/w and allowed to mix to homogeneity. This formulation contains a nonionic surfactant and gives an emulsion that is fluid at room temperature but viscifies above 32°C.

20 Formulations including a cationic surfactant formulation: An O/W (oil-in-water) emulsion was made by combining the following ingredients utilizing conventional mixing techniques:

Table 6.

Ingredient	% w/w
10 % wt. 1:1 responsive polymer network as prepared in Example 1	20.0
Behentrimonium Methosulfate (and) Cetearyl alcohol ¹	2.5
Mineral Oil	5.0

¹ Incroquat Behenyl TMS available from Croda

Into a vessel equipped with a high efficiency homogenizer, the formula amount

of all ingredients is added and allowed to mix to homogeneity. This formulation contains a cationic surfactant and gives an emulsion that is fluid at room temperature but viscosifies above 32°C.

Formulations including an anionic surfactant formulation: An O/W (oil-in-water) emulsion was made by combining the following ingredients utilizing conventional mixing techniques:

Table 7.

Ingredient	% w/w
10 % wt. 1:1 responsive polymer network as prepared in Example 1	20.0
Cetearyl Phosphate (and) Cetearyl alcohol ¹	2.5
Mineral Oil	5.0

¹ Crodafos CES available from Croda

Into a vessel equipped with a high efficiency homogenizer, the formula amount of all ingredients is added, water is added to 100% w/w and allowed to mix to homogeneity. This formulation contains a anionic surfactant and gives an emulsion that is fluid at room temperature but viscosifies above 32°C.

Example 32. Acne Medication: An oil-free, clear, anti-acne treatment is made by combining the following ingredients utilizing conventional mixing techniques:

Table 8.

Ingredient	% w/w
10 % wt. 1:1 responsive polymer network prepared as in Example 1	20.0
Glycerin USP	5.0
Salicylic Acid	2.0
DL-Panthenol	0.5
Germaben® II ¹	0.1
Disodium EDTA	0.2
USP Purified Water	72.2

¹ Germaben®II available from Sutton Laboratories

To one vessel, equipped with a Lightnin' Mixer with a 3 blade paddle prop,

the full amount of USP Purified Water to 100% w/w is added. While maintaining the temperature, with moderate to vigorous mixing, the formula amount of Disodium EDTA, Citric Acid, DL-Panthenol, Glycerin, Salicylic Acid, and Germaben® II is added. These materials are allowed to dissolve at 50°C. After dissolution, the vessel is then cooled to 20°C. To another vessel, equipped with a high efficiency homogenizer, the formula amount of responsive polymer network is added. The responsive polymer network vessel is then cooled to 4°C. After cooling, while vigorously homogenizing, the contents of the first vessel is added to the second vessel, and allowed to mix to homogeneity.

The composition displays a flowable clear jelly appearance with excellent spreadability and absorption characteristics at room temperature, and after heating the formulation to 32°C, the composition thickens to a gel-like consistency.

Example 33. (a) Oil-free Moisturizer (formulation I): An oil-free, lubricous moisturizer was made by combining the following ingredients utilizing conventional mixing techniques:

Table 9.

Ingredient	% w/w
10% wt 1:1 responsive polymer network as prepared in Example 1	20.0
Glycerin USP	5.0
PPG-2 Myristyl Ether Propionate	3.0
DL-Panthenol	0.5
Germaben® II ¹	0.1
Disodium EDTA	0.2
Citric Acid	0.01
USP Purified Water	71.19

¹ Germaben® II available from Sutton Laboratories

The above ingredients were added and processed as described above for the acne composition. The composition displayed a flowable creamy lotion appearance with excellent emolliency, spreadability and absorption characteristics at room temperature. After heating the formulation to above 26°C, the composition thickened to a gel-like consistency. The viscosity vs. temperature curve is shown in Figure 21 and demonstrates that addition of adjuvants to the composition significantly enhances the responsive polymer network maximum viscosity (> 900,000 cps). The use of the poloxamer:poly(acrylic acid) polymer network in the formulation also imparts a unique viscosification effect after application to the skin, which is not evident in typical commercial O/W emulsion formulations (See, Figure 21b).

(b) Oil-free Moisturizer (formulation II): An oil-free, lubricious moisturizer was made by combining the following ingredients utilizing conventional mixing techniques:

Table 10.

Ingredient	% w/w
1:1 polymer network as prepared in Example 1	2.0
Glycerin USP	5.0
Carbopol 980	1.0
D-panthenol, propylene glycol	1.0
Preservative	1.0
Hydrolyzed protein (and) hyaluronic acid	0.5
Sodium hydroxide.	0.2
USP Purified Water	90

The above ingredients were added and processed as described above for the acne composition. The composition displayed a flowable creamy lotion appearance with excellent emolliency, spreadability and absorption characteristics at room temperature. After heating the formulation to 26°C, the composition thickens to a gel-like consistency. The addition of adjuvants to the composition significantly enhances the polymer network maximum viscosity.

Example 34. Sunscreen Lotion. An oil-free, lubricious sunscreen lotion was made by combining the following ingredients utilizing conventional mixing techniques:

Table 11.

Ingredient	% w/w
1:1 polymer network as prepared in Example 1	2.0
Glycerin USP	8.0
Carbopol 980	1.0
Parsol MCX	7.0
Myristyl Ether Propionate	5.0
Preservative	1.0
Cyclomethicone	1.0
Sodium hydroxide	0.2
USP Purified Water	74

The above ingredients were added and processed as described above for the acne composition. The composition displayed a flowable creamy lotion appearance with excellent emolliency, spreadability and absorption characteristics at room temperature. After heating the formulation to above 26°C, the composition thickened to a gel-like consistency. The addition of adjuvants to the composition significantly enhances the polymer network maximum viscosity.

Example 35. Facial mask. A face mask was made by combining the following ingredients utilizing conventional mixing techniques:

Table 12.

Ingredient	% w/w
1:1 polymer network as prepared in Example 1	1.0
Polyvinyl alcohol	6.0
Polyvinylpyrrolidone (20%)	5.0
D-panthenol, propylene glycol	1.25
Propylene glycol	1.25
USP Purified Water	85.5

The above ingredients were added and processed as described above for the acne composition. The composition displayed a flowable creamy lotion appearance with excellent emolliency, spreadability and absorption characteristics at room temperature. After heating the formulation to above 26°C, the composition thickened to a gel-like consistency. The addition of adjuvants to the composition significantly enhances the polymer network maximum viscosity.

Example 36. Facial toner. A face mask was made by combining the following ingredients utilizing conventional mixing techniques:

Table 13.

Ingredient	% w/w
1:1 polymer network as prepared in Example 1	0.01
Hydroxyethyl cetyldimonium phosphate	1.00
PEG-40 hydrogenated castor oil	2.00
D-panthenol, propylene glycol	0.50
Glycerin	2.00
Witch hazel extract	5.00
USP Purified Water	88.49

The above ingredients were added and processed as described above for the acne composition. The composition displayed a flowable appearance with excellent emolliency, spreadability and absorption characteristics at room temperature. After heating the formulation to above 26°C, the composition thickened to a gel-like consistency. The addition of adjuvants to the composition significantly enhances the polymer network maximum viscosity.

Example 36. Solubilization studies of model hydrophobic agents in the poloxamer: poly(acrylic acid) polymer network: estradiol and progesterone. This example is presented to demonstrate the solubilization of a hydrophobic agent in the polymeric network. Progesterone and estradiol were used as the hydrophobic agents in this model solubilization study.

Acrylic acid (99%), fluorescein (98%), β -estradiol (98%), and progesterone (98%) were all obtained from Aldrich and used as received. Pluronic® F127 NF was obtained from BASF. Poly(oxyethylene-b-oxypropylene-b-oxyethylene)-g-poly(acrylic acid) copolymers (responsive polymer network) were synthesized by free-radical polymerization of acrylic acid in the presence of poloxamer as described above. The polymer network copolymers discussed here were composed of about 1:1 ratio of PAA to poloxamer. The rheological properties of polymer network were assessed using LVDV-II+ and RVDV-II+ Brookfield viscometers. The microscopic light scattering of 21 nm poly(styrene) latex particles in deionized water and 1 w% reversibly gelling polymer network was measured using He-Ne laser as described previously (See, Matsuo, E.S., Orkisz, M., Sun, S.-T., Li, Y., Tanaka, T., Macromolecules, 1994, 27, 6791). The solubility of fluorescein and hormones in aqueous solutions was measured by the equilibration of excess solubilize with the corresponding solution following removal of undissolved species by centrifugation and filtration. Hydrophobic agents were assayed spectrophotometrically at 240 (progesterone) or 280 nm (estradiol), or by using 70/30 w/w H₂SO₄/MeOH (Tsilifonis-Chafetz reagent). In vitro hormone release studies were conducted using thermostatted, vertical Franz cells. Spunbonded polypropylene microfilters (micron retention, 15-20) were used as a membrane separating feed and receiver phases in

Franz cells. The responsive polymer network, water, ethanol, and 20% PEG in water were observed to wet the membrane. The receiver solutions consisted of 20 w% PEG in water (pH 7) and were stirred by magnetic bars. The feed phases composed of responsive polymer network were loaded with either estradiol or progesterone. Each hormone was dissolved in ethanol and the resulting solution was added into the responsive polymer network.

Equilibrium solubility vs. temperature plots for estradiol and progesterone (partition coefficient octanol/water (P) 7200 and 5888, respectively, in aqueous solutions of Pluronic® F127 polyol and responsive polymer network are presented in Figure 22. It can be seen that increasing temperature and concentration (C) of polymers in the solution raises the amount of the hormone dissolved. In Figure 22a, vertical lines represent critical micellar temperatures (CMT) for corresponding Pluronic F127 polyol solutions. It is interesting to note that the slope of the solubility-temperature plots increased as temperature reached CMT, indicating that solubilization in the Pluronic solutions was predominantly due to the formation of micelles. Similar trend was observed in the responsive polymer network solutions. The S values in 5% aqueous solutions of branched PAA did not exceed 15 and 40 µg/mL at 60 °C for estradiol and progesterone, respectively. The solubility values found for responsive polymer network were the same as S in parent Pluronic solutions of equivalent concentrations. Therefore, it may be suggested that solubilization behaviors of the responsive polymer network are governed by the properties of the poloxamer incorporated into it. Thermodynamic parameters of the solubilization process with responsive polymer network were calculated using the same approximations as in the micellar solubilization with Pluronic polyols. See, Saito, Y., Kondo, Y., Abe, M., Sato, T., Chem.Pharm.Bull., 1994, 42, 1348. Namely, partition coefficient P was estimated from equilibrium solubilities of estradiol in responsive polymer network and water:

$$P = S_{SH}/S_w \quad (13)$$

by extrapolating the solubility plots of the steroid in Figure 22 to 100 % responsive polymer network. Using P values obtained from data in Figure 23, we calculated the

standard free energy change (ΔG), standard enthalpy of solubilization (ΔH), and standard entropy of solubilization (ΔS) using the following expressions:

$$\Delta G = -RT \ln P; \Delta H = -R \Delta \ln P / \Delta(1/T); \Delta S = (\Delta H - \Delta G)/T \quad (14)$$

Thermodynamic parameters obtained along with P values are given in Table 13.

- 5 Apparent partition coefficients and thermodynamic parameters for solubilization of estradiol by responsive polymer network.

Table 13.

T, K	P=SSH/S	ΔG kJ/mol	ΔH kJ/mol	ΔS J/mol
277	490	-14.3	4.72	68.6
293	520	-15.2		52.0
310	660	-16.7		53.9
323	660	-17.4		54.0
333	660	-18.0		54.0

Negative ΔG values indicate spontaneous solubilization at all temperatures, whereas positive ΔH shows that the solubilization was endothermic, similar to the solubilization of estriol, as well as indomethacin, by the poloxamer. Notably, ΔS of solubilization was always positive, suggesting that the more ordered water molecules surrounding hydrophobic estradiol molecules moved to the less ordered bulk phase when the estradiol was transferred to the hydrophobic core of PPG segments in responsive polymer network. The aggregation of the PPG segments at elevated temperatures provides not only temporary cross-linking in the gel, but also a thermodynamically "friendly" environment for the hydrophobic drugs. Indeed, one can express the free energy of formation of the aggregate core-water interface in responsive polymer network as:

$$\Delta G = [\sigma P_w(1 - \phi) + \sigma W_D \phi](4\pi R^2/n) \quad (15)$$

where σP_w and σW_D are the interfacial tensions between pure PPO polymer and water and between water and the drug, respectively; ϕ is the volume fraction of the drug within PPO core; R is the effective radius of the core, and n is the aggregation number.

Equation (3) shows that solubilization of a hydrophobic drug of high σ_{WD} should increase the stability of the aggregate. The solubilization process was found to decrease the critical micellization concentration and substantially increase the micellar core radius in Pluronic surfactants (Hurter, P.N. *et al.*, "In Solubilization in Surfactant Aggregates", Christian, S.D., Ed., Marcel Dekker, New York, 1995). A similar trend is indicated by the lowering the onset of gelation of the responsive polymer network upon solubilization of fluorescein (LogP 2.1) (Figure 24). The solubilization of hydrophobic drugs by responsive polymer network, analogous to the micellar solubilization of drugs by poloxamer, suggests that the responsive polymer network can be an effective vehicle in drug delivery.

Our *in vitro* study of hormone release from responsive polymer network shows an increase in the initial transport rate with either decreasing total polymer concentration in the formulation or decreasing temperature (Figure 25). These effects are related to the changes in macroscopic viscosity of the responsive polymer network, which erodes more rapidly from the feed phase through the membrane into the receiver compartment as the viscosity decreases (Figure 26). The degree of the responsive polymer network erosion was measured by weighing hormone-loaded responsive polymer network before and after kinetic experiment.

Figure 27 shows that the relative amount of progesterone penetrating into the receiver phase decreased 4-fold with the increase of total polymer concentration, whereas the total relative amount of progesterone stayed almost constant as total polymer concentration in the responsive polymer network increased. This result shows the existence of two routes of transport of hydrophobic drugs in our model system. Firstly, the drug incorporated into aggregates within the responsive polymer network system can flow through the membrane along with the erosion of the responsive polymer network; secondly, the drug not associated with the responsive polymer network aggregates can diffuse out of the responsive polymer network in the feed phase. The second process should not be related to the viscosity of the responsive polymer network. Indeed, the dynamic light scattering experiment shows no dramatic change of diffusivity of poly(styrene) latex particles in the responsive polymer

network as temperature rises thereby increasing macroscopic viscosity more than 10-fold (Figure 28). This result indicates that the viscosity of the responsive polymer network is essentially unaffected on the microscopic scale.

5 Appendix A attached.

APPENDIX A

Cosmetic Bench Reference

Function Definitions

- Abrasive:** abrades, smooths, polishes
- Absorbent powder:** takes up liquids, sponge-like action
- Absorption base:** forms water-in-oil emulsions
- Acidulent:** acidifies, lowers pH, neutralizes alkalis
- Amphoteric:** capable of reacting chemically either as an acid or a base; amphoteric surfactants are compatible with anionic and cationic surfactants
- Analgesic:** relieves pain
- Antacid:** neutralizes stomach acidity
- Antibacterial:** destroys/inhibits the growth/reproduction of bacteria
- Anti-caking:** prevents or retards caking of powders; keeps powders free-flowing
- Anti-dandruff:** retards or eliminates dandruff
- Antifoam:** suppresses foam during mixing
- Anti-inflammatory:** reduces, suppresses, counteracts inflammation
- Anti-irritant:** reduces, suppresses or prevents irritation
- Antimicrobial:** destroys, inhibits or suppresses the growth of microorganisms
- Antioxidant:** inhibits oxidation and rancidity
- Antiperspirant:** reduces or inhibits perspiration
- Antipruritic:** reduces or prevents itching
- Antiseptic:** inhibits the growth of microorganisms on the skin or on living tissue
- Antistat:** reduces static by neutralizing electrical charge on a surface
- Astringent:** contracts organic tissue after application
- Binder:** promotes cohesion of powders
- Bleaching agent:** lightens color, oxidizing agent
- Botanical:** natural plant derivative
- Buffer:** helps maintain original pH (acidity or basicity) of a preparation
- Carrier:** a vehicle or base used for a preparation
- Chelate:** form a complex with trace-metal impurities, usually calcium or iron
- Colorant:** adds color, may be a soluble dye or an insoluble pigment
- Conditioner:** improves condition of skin and hair
- Coupling agent:** aids in solubilization or emulsification of incompatible components
- Decolorant:** removes color by adsorption, bleaching or oxidation
- Denaturant:** used to denature ethyl alcohol
- Dental powder:** powdered dentifrice
- Deodorant:** destroys, masks or inhibits formation of unpleasant odors
- Depilatory:** removes hair chemically
- Detergent:** a surface-active agent (surfactant) that cleans by emulsifying oils and suspends particulate soil
- Disinfectant:** destroys pathogenic microorganisms
- Dispersant:** promotes the formation and stabilization of a dispersion or suspension
- Dye stabilizer:** see Stabilizer
- Emollient:** softens, smooths skin
- Emulsifier:** a surface-active agent (surfactant) that promotes the formation of water-in-oil or oil-in-water emulsions
- Enzymes:** complex proteins produced by living cells that catalyze biochemical reactions at body temperature
- Fiber:** strands of natural or synthetic polymers; for instance, cotton, wool, silk, nylon, polyester
- Film former:** solution of a polymer that forms films when the solvent evaporates after application to a surface
- Fixative:** fixes or sets perfumes; retards evaporation; promotes longer lasting aroma
- Flavor:** imparts a characteristic taste (and aroma) to edible foods and drinks; sometimes used in lip products
- Foam booster:** enhances quality and quantity of lather of shampoos
- Foamer:** a surface-active agent (surfactant) that produces foam; an emulsion of air-in-water
- Foam stabilizer:** see Foam booster
- Fungicide:** inhibits or destroys growth of fungi
- Gellant:** a gelling agent; forms gels; includes a wide variety of materials such as polymers, clays and soaps
- Glosser:** furnishes a surface luster or brightness; usually used in lip or hair products
- Hair colorant:** see Colorant
- Hair conditioner:** see Conditioner
- Hair dye:** imparts a new permanent or semi-permanent color to hair
- Hair-set polymer:** polymer and/or resins used to maintain desired hair shape
- Hair-set resin:** see Hair-set polymer
- Hair waving:** see Reducing agent and Neutralizer
- Humectant:** absorbs, holds and retains moisture
- Hydrotrope:** enhances water solubility
- Intermediate:** basic chemicals which are chemically modified to obtain the desired function
- Lathering agent:** a surface active agent (surfactant) that forms a foam or lather on mixing with air in solution; see also Foamer
- Lubricant:** reduces friction, smooths, adds slip
- Moisture barrier:** retards passage of moisture or water
- Moisturizer:** aids in increasing the moisture content of the skin through humectant or barrier action
- Neutralizer:** an oxidizing agent used in hair waving that stops the action of the reducing agent and re-establishes the disulfide linkages in hair
- Oil absorbent:** see Absorbent powder
- Ointment base:** an anhydrous mixture of oleaginous components used as a vehicle for medicaments
- Opacifier:** opacifies clear liquids or solids
- Oxidant:** oxidizing agent, neutralizes reducing agents, bleaching agent
- Pearlant:** imparts a pearly texture and luster
- Perfume solvent:** see Solvent and Solubilizer

Peroxide stabilizer: see Stabilizer

Pigment: a finely powdered insoluble substance used to impart color, luster or opacity

Plasticizer: plasticizes (makes more flexible) polymeric films or fibers

Polish: smoothes; adds gloss and luster

Polymer: a very high molecular weight compound consisting of repeating structural units

Powder: a solid in the form of fine particles

Preservative: protects products from spoilage by microorganisms

Propellant: pressurized gas in a container used to expel the contents when pressure is released by opening a valve

Protein: naturally occurring complex combinations of amino acids

Reducing agent: reduces a chemical compound usually by donating electrons; neutralizes oxidizing agents

Refatting agent: adds oils materials to the surface of substrates, e.g., skin and hair

Resin: nonvolatile solid or semisolid organic substances obtained from plants as exudates to prepared by polymerization of simple molecules

Sequestrant: forms coordination complexes with multivalent positive ions

Silicone: polymeric organic silicon compounds which are water resistant

Skin protectant: protects skin from environmental

Solubilizer: solubilizes, usually into aqueous vehicles, normally insoluble materials, such as fragrances, flavors, oils, etc.

Solvent: usually liquids capable of dissolving other substances

Stabilizer: added to stabilize emulsions and/or suspensions

Stimulant: produces a temporary increase in the functional activity of an organism or any of its parts

Surfactant (surface-active agent): lowers surface tension between two or more incompatible phases; soaps, detergents, wetting agents, solubilizing agents and emulsifying agents are typical surfactants; surfactants are classified as anionic, cationic, nonionic and amphoteric; anionic surfactants are negatively charged, cationic surfactants have no electrical charge

Suspending agent: keeps finely divided solid particles in suspension

Sweetener: sweetens to provide a more pleasant taste

Tanning accelerator: accelerates the tanning of skin

Thickener: thickens or increases viscosity/consistency

Thixotrope: the property of certain gels and emulsions of becoming more fluid or less viscous when shaken or stirred

UV absorber: used as a sunscreen and to protect preparations from degradation by UV radiation

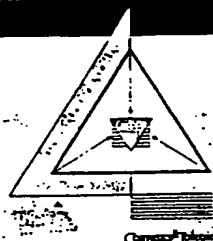
UVA absorber: absorbs in the range 320-400 nanometers (nm)

UVB absorber: absorbs in the range 290-320 nanometers (nm)

Wax: any of numerous substances of plant, animal or synthetic origin that contain principally esters of higher fatty acids and higher fatty alcohols; free fatty alcohols, fatty acids and hydrocarbons may also be present; waxes derived from petroleum products are mainly high-molecular-weight hydrocarbons

Wetting agent: a surface-active agent (surfactant) that lowers the surface and interfacial tension, facilitating the wetting of surfaces

From the Editors of *Cosmetics & Toiletries* magazine



Hair Care

Adsorption of cationic polymers

D. Coddard and R. Schmitt

Ceramide - *D. Braida et al*

Melanins - *K.C. Brown and C. Prota*

Men's hair coloring - *S. Casperson*

Skin permeation of hair dyes - *H. Beck et al*

African-American hair - *A. Syed et al*

Ethnic hair care - *A. Syed*

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Keeping VOCs under control - *S. Price*

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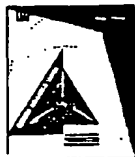
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Functions

Abrasive

Adzuki beans
Almond (*Prunus amygdalus*) meal, shell granules
Aluminum silicate
Apricot (*Prunus armeniaca*) kernel powder, shells
Hydrated silica
Jojoba (*Buxus chinensis*) seed powder
Luffa cylindrica
Olive stone granules
Oyster shell powder
Peach (*Prunus persica*) pit powder
Peach (*Prunus persica*) stone granules
Polyethylene
Polyethylene HEC granules
Polyethylene oxidized, P. spheres
Polystyrene
Pumice
Rice (*Oryza sativa*) bran
Silica and S. colloidal
Sodium chloride
Walnut (*Juglans regia*) shell powder

Absorption base

1,2,6-Hexanetriol
Kaolin
Petrolatum
Rice (*Oryza sativa*) starch
Soy (*Glycine soja*) sterol
Zeolite

Absorbent powder

Corn (*Zea mays*) starch
Maltodextrin
Nylon-12
Oat (*Avena sativa*) bran, flour, meal
Zeolite

Acidulent

Acetic acid
Citric acid
Fumaric acid
Glutamic acid
Glycolic acid

Hydrochloric acid

Lactic acid
Nitric acid
Phosphoric acid
Sodium bisulfate
Sulfuric acid
Tartaric acid

AHA

Apple (*Pyrus malus*) extract
Apricot (*Prunus armeniaca*) kernel powder
Citric acid
Ethyl lactate
Glycolic acid
Lactic acid
Malic acid
Sodium lactate
Tartaric acid

Antiacne

Clays (white, yellow, red, green, pink)
Perfluorodecalin
Salicylic acid
Sulfur

Anti-aging

Basil (*Ocimum basilicum*) extract
Carrot (*Daucus carota*) extract
Catalpa kaempferia extract
Ceramide 33 (liquid soy extract)
Crataegus cuneata extract
Eugenia jambolana extract
Fomes fomentarius extract
Fomistopsis pinicola extract
Ganoderma lucidum oil
Ginseng (*Panax ginseng*) extract
Hyaluronic acid
Hydrolyzed serum protein
Hydrolyzed soy flour
Isachne pulchella extract
Lactoferrin
Lady's Thistle (*Silybum marianum*) extract
Ligusticum jeholense extract

Marine collagen

Mushroom (*Coriolus versicolor*) extract
Musk rose (*Rosa moschata*) oil
Perfluorodecalin
Quaternium-51
Rubus thunbergii extract
Serum protein
Stenocalyx micalii extract
Tricholoma matsutake extract

Antibacterial

Ammonium iodide
Chlorhexidine
Chlorhexidine diacetate, C. digluconate
Chlorhexidine dihydrochloride
Chlorphenesin
Hexamidine diisethionate
Hexetidine
Iceland moss (*Cetraria islandica*) extract
Lactoferrin
Lauralkonium bromide, L. chloride
Laurtrimonium chloride
Laurylpyridinium chloride
Mauritiella armata extract
Mushroom (*Cordyceps sabolifera*) extract
Orange blossom extract
Orange (*Citrus aurantium dulcis*) peel extract
PEG-42 Ebrinko ceramides extract
Peppermint (*Mentha piperita*) extract
Philodendron (*Phellodendron amurense*) extract
Pine (*Pinus sylvestris*) needle extract
Polymethoxy bicyclic oxazolidine
Quaternium 73
Rubus thunbergii extract
Tea tree (*Melaleuca alternifolia*) oil
Triclocarban
Undecylenic acid

Anticaking

Aluminum starch octenylsuccinate
Calcium stearate
Distarch phosphate
Hydrated silica

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Silica silylate
Sodium aluminum silicate
Zinc stearate

Anticaries agent

Cetylamine hydrofluoride
Olaflur
Sodium fluoride
Stearyl trihydroxyethyl propylenediamine dihydrofluoride

Anticellulite

Aminophylline
Bladderwrack (*Fucus vesiculosus*) extract
Butcherbroom (*Ruscus aculeatus*) extract
Carcinia cambogia extract
Fomes fomentarius extract
Fomistopsis pinicola extract
Ivy extract
Mushroom (*Coriolus versicolor*) extract
TEA-hydroiodide
Tricholoma matsutake extract

Antidandruff

Burdock (*Arcium lappa*) extract
Chloroxylenol
Corydalis ambigua extract
Disodium undecylenamido MEA-sulfosuccinate
Ginger root extract
Inga edulis extract
Mauritiella armata extract
Myristalkonium saccharinate
PEG-6 undecylenate
Piroctone olamine
Resorcinol
Rosemary (*Rosmarinus officinalis*) extract
Sodium shale oil sulfonate
Stenocalyx micalii extract
Undecylenamide DEA
Willow (*Salix alba*) bark extract
Zinc pyrithione

Antifungal

Black walnut (*Juglans nigra*) extract
Coneflower (*Echinacea angustifolia*) extract
Orange blossom extract
Pfaffia paniculata extract

Anti-inflammatory

Allantoin polygalacturonic acid
Bisabolol
Black poplar (*Populus nigra*) extract
Brassica rapa-depressa extract
Butcherbroom (*Ruscus aculeatus*) extract
Calendula officinalis extract
Catalpa kempferi extract
Celastrus paniculata extract
Ceramide 33 (liquid soy extract)
Chaparral (*Larrea mexicana*) extract
Coneflower (*Echinacea angustifolia*) extract
Cornflower (*Centaurea cyanus*) extract
Dipotassium glycyrrhizinate
Eupatorium fortunei extract
Euphrasia officinalis extract
Ficus racemosa extract
Golden seal (*Hydrastis canadensis*) root extract
Guaiaculene
Horse chestnut (*Aesculus hippocastanum*) extract
Jujube (*Zizyphus jujuba*) extract
Laminaria japonica extract
Licorice (*Glycyrrhiza glabra*) extract
Ligusticum jeholense, L. lucidum extract
Matricaria (*Chamomilla recutita*) extract
Melaleuca uncinata extract
Melia azadirachta extract

Mulberry (*Morus nigra*) extract
Niacinamide ascorbate
Orange (*Citrus aurantium dulcis*) peel extract
Orange blossom extract
Palmetto extract
Palmitoyl collagen amino acids
Passion flower (*Passiflora laurifolia*) fruit extract
Paulownia imperialis extract
Salicylic acid
Shea butter (*Buryspermum parkii*)
Sodium carboxymethyl beta-glucan
Soy (Glycine soja) protein
Stearyl glycyrrhizinate
Stenocalyx micalii extract
Tocopheryl acetate, T. nicotinate
Trichomonas japonica extract
Willow (*Salix alba*) extract
Witch hazel (*Hamamelis virginiana*) extract
Withania somniferum extract
Yarrow (*Achillea millefolium*) extract
Zinc lactate

Anti-irritant

Acetyl monoethanolamine
Allantoin
Allantoin acetyl methionine, A. glycyrrhetic acid
Azelaic MEA
Betaine
Calendula officinalis extract
Cocamidopropyl betaine
Coceth-7 carboxylic acid
Cornflower (*Centaurea cyanus*) extract
Diisostearyl dimer dillenoate
Dipalmitoyl cystine
Green tea extract
Hydrolyzed sweet almond protein
Hydroxypropyltrimonium gelatin
Lauroyl collagen amino acids
L-Lysine lauroyl methionine
Mallow extract
Matricaria (*Chamomilla recutita*) extract
Palmitoyl hydrolyzed milk protein
Palmitoyl hydrolyzed wheat protein
Palmitoyl keratin amino acids
PEG-12 palm kernel glycerides
PEG-28 glyceryl tallowate
PEG-30 glyceryl monococoate
PEG-60 almond glycerides
PEG-78 glyceryl cocoate
PEG-82 glyceryl tallowate
PEG-200 glyceryl tallowate
Propionyl collagen amino acids
PVP
Saccharomyces lysate extract
Sodium C12-15 pareth-15 sulfonate
Sodium lauroamphoacetate
Soy (Glycine soja) protein
Undecylenoyl collagen amino acids
Valerian (*Valeriana officinalis*) extract

Antimicrobial

Benzalkonium chloride
Benzoic acid
Benzyl alcohol
Bromochlorophene
2-Bromo-2-nitropropane-1,3-diol
Butylparaben
Capryloyl collagen amino acids
Capryloyl glycine, C. keratin amino acids
Captan
Cetylhydmonium bromide
Cetyl pyridinium chloride
Chlorothymol
Chloroxylenol
Citron oil
Copper PCA
Dichlorobenzyl alcohol
Dilauryldimonium chloride

Domiphen bromide
Ethylparaben
Eucalyptus (*Eucalyptus globulus*) extract
Fennel (*Foeniculum vulgare*) extract
Garlic (*Allium sativum*) extract
Glyceryl caprylate, G. laurate
Hexamidine diisethionate
Hinokitiol
Honeysuckle (*Lonicera caprifolium*) extract
Lichen (*Usnea barbata*) extract
Myristalkonium chloride
Pentylene glycol
Phenethyl alcohol
Phenol
Phenoxyethanol
Phenoxyisopropanol
Phenyl mercuric acetate, P.m. benzoate, P.m. borate
o-Phenylphenol
Polymethoxy bicyclic oxazolidine
Potassium sorbate
Propylparaben
Ricinoleamodopropyltrimonium ethosulfate
Sage (*Salvia officinalis*) extract
Sodium benzoate, S. pyrithione
Sodium ricinoleate, S. shale oil sulfonate
Thimerosal
Thyme (*Thymus vulgaris*) extract
Thymol
Triclocarban
Triclosan
Undecylenamidopropyltrimonium methosulfate
Undecylenic acid
Zinc oxide, Z. PCA
Zinc pyrithione, Z. undecylenate

Antioxidant

Ascorbic acid
A. polypeptide
Ascorbyl oleate, A. palmitate
Beta-carotene
BHA
BHT
t-Butyl hydroquinone
Dilauryl thiodipropionate
Dimyristyl thiodipropionate
Disodium EDTA
Distearyl thiodipropionate
Dodecyl gallate
EDTA
Erythorbic acid
Ferulic acid
Grape (*Vitis vinifera*) seed extract
Green tea extract
HEDTA
Hydroquinone
Hydroquinone-beta-D-glucopyranoside
p-Hydroxyanisole
Lactoferrin
Lysine PCA
Melanin
Methyl gallate
Niacinamide ascorbate
Nordihydroguaiaretic acid
Oat (*Avena sativa*) extract
Oryzanol
Pentasodium pentetate
Penetic acid
Propyl gallate
Retinyl palmitate polypeptide
Rosemary (*Rosmarinus officinalis*) extract
Saccharomyces lysate extract
Sage (*Salvia officinalis*) extract
Sodium ascorbate, S. erythorbate
Sodium metabisulfite
Sodium selenate, S. sulfite
Superoxide dismutase
Tea (*Camellia sinensis*) extract
Tetrasodium EDTA
Tocopherol

Functions

Tocopheryl acetate, T. linoleate
Wild marjoram (*Origanum vulgare*) extract
Yeast (*Saccharomyces cerevisiae*) extract (Faex)

Antiperspirant

Allantoin-aluminum chlorhydrate
Aluminum capryloyl hydrolyzed collagen
Aluminum chlorohydrate, A. chloride
Aluminum chlorohydrate, A. chlorohydrate
Aluminum PCA, A. sesquichlorohydrate
Aluminum undecylenoyl collagen amino acids
Aluminum zirconium pentachlorohydrate
Aluminum zirconium tetrachlorohydrate
Aluminum zirconium tetrachlorohydrate GLY
Aluminum zirconium trichlorohydrate
Aluminum-zirconium-glycine powder
Sage (*Salvia officinalis*) extract
Tormentil (*Potentilla erecta*) extract
Zirconium chlorohydrate

Antiseptic

Aluminum PCA
Azadirachta indica extract
2-Bromo-2-nitropropane-1,3-diol
Calendula amurensis extract
p-Chloro-m-cresol
Clove (*Eugenia caryophyllus*) oil
Crataegus cuneata extract
Dichlorobenzyl alcohol
Entada phaseoloides extract
Eucalyptus (*Eucalyptus globulus*) extract
Golden seal (*Hydrastis canadensis*) root extract
Hexachlorophene
Melia australasica, M. azadirachta extract
Methyl salicylate
Orange (*Citrus aurantium dulcis*) peel extract
Oxyquinoline sulfate
Pfaffia paniculata extract
Potassium abietoyl hydrolyzed collagen
PVP-iodine
Silver nitrate
Sodium salicylate
Sterculia plataniifolia extract
Tea tree (*Melaleuca alternifolia*) oil
Tormentil (*Potentilla erecta*) extract
Xanthoxylum bungeanum extract

Antistat

Acetamide MEA
Acetamidopropyl trimonium chloride
6-(N-Acetylaminio)-4-oxyhexyltrimonium chloride
Alkyl dimethyl betaine
Babassuamidopropylalkonium chloride
Behenamidopropyl ethyldimonium ethosulfate
Behenamidopropyl hydroxyethyl dimonium chloride
Carboxymethyl chitin
Cetethyl morpholinium ethosulfate
Cetrimonium chloride
Chitin
Chitosan
Cocamidopropyl ethyldimonium ethosulfate
Cocodimonium hydroxypropyl hydrolyzed rice protein
Cocodimonium hydroxypropyl hydrolyzed soy protein
Dimethicone hydroxypropyl trimonium chloride
Dimethyl behenamine, D. cocamine
Dimethyl palmitamine, D. soyamine
Dimethyl tallowamine
Diolethylamidopropyl hydroxyethylmonium methosulfate
Dipalmitoylethyl hydroxyethylmonium methosulfate
N-Dodecyl-N,N-dimethyl-N-(dodecyl acetate) ammonium chloride
Erucamidopropyl hydroxysulfate
Glyceryl monoperfluoroglutarate
Hydrogenated tallowamine oxide
Isostearamidopropyl dimethylamine

Lactamidopropyl trimonium chloride
Lauryldimonium hydroxypropyl hydrolyzed collagen
Linoleamidopropyl dimethylamine dimer dilinoleate
Olealkonium chloride
PEG-2 cocamine
PEG-2 cocomonium chloride
PEG-2 olearamonium chloride
PEG-8 caprylic/capric glycerides
PEG-10 cocamine
PEG-15 soyamine
PPG-9 diethylmonium chloride
PPG-25 diethylmonium chloride
PPG-40 diethylmonium chloride
Propylene glycol stearate
Quaternium-26, -27, -53, -62, -72
Rapeseedamidopropyl benzyldimonium chloride
Rapeseedamidopropyl epoxypropyl dimonium chloride
Silica, colloidal
Sorbitan caprylate
N-Soya-(3-amidopropyl)-N,N-dimethyl-N-ethyl ammonium ethyl sulfate
Soyethyl morpholinium ethosulfate
Soyethylmonium ethosulfate
Stearalkonium chloride
Stearamidopropyl benzyl dimonium chloride
Stearamidopropyl ethyldimonium ethosulfate
Steartrimonium chloride
N-Stearyl-(3-amidopropyl)-N,N-dimethyl-N-ethyl ammonium ethyl sulfate
Wheat germamidopropyl ethyldimonium ethosulfate

Astringent

Aluminum citrate, A. lactate
Astragalus sinicus extract
Astrocaryum murumuru, A. nucuna extract
Azadirachta indica extract
Azelamide MEA
Bearberry (*Arctostaphylos uva-ursi*) extract
Birch (*Betula alba*) leaf extract
Catalpa kaempferia extract
Celastus paniculata extract
Coccinea indica extract
Coffee (*Coffea arabica*) bean extract
Euphrasia officinalis extract
Euterpe precatoria extract
Evening primrose (*Oenothera biennis*) extract
Gentian (*Gentiana lutea*) extract
Geranium maculatum extract
Grape (*Vitis vinifera*) leaf extract
Henna (*Lawsonia inermis*) extract
Hierochloa odorata extract
Honeysuckle (*Lonicera caprifolium*) extract
Hops (*Humulus lupulus*) extract
Horsetail extract
Hypericum perforatum extract
Ivy extract
Juniperus communis extract
Kadsura heteliloca extract
Kola (*Cola acuminata*) extract
Lady's mantle (*Alchemilla vulgaris*) extract
Lemon (*Citrus medica limonum*) extract, peel extract
Lemon bioflavonoids extract
Lysimachia foenum-graecum extract
Magnolia spp. extract
Mauritia flexosa extract
Maximiliana regia extract
Melaleuca uncinata, M. wilsonii extract
Melia australasica extract
Nettle (*Urtica dioica*) extract
Oak (*Quercus*) bark extract
Ocimum basilicum, O. sanctum extract
Palmetto extract
Passion flower (*Passiflora laurifolia*) fruit extract
Plantain (*Plantago major*) extract
Polygonum multiflorum extract
Pterocarpus marsupianus extract
Raspberry (*Rubus*) extract

Sambucus nigra oil
Sanguisorba root extract
Selinum spp. extract
Shorea robusta extract
Tannic acid
Walnut (*Juglans regia*) leaf extract, oil
Wheat (*Triticum vulgare*) protein
White nettle (*Lamium album*) extract
Witch hazel (*Hamamelis virginiana*) extract
Xanthoxylum bungeanum extract
Zinc lactate
Ziziphus jujuba extract

Binder

Aluminum starch octenylsuccinate
Boron nitride
C20-40, C30-50, C40-60 alcohols
Calcium stearate
Cellulose gum
Dihydroabieryl behenate
Diisostearyl malate
Dioctyl sebacate
Distarch phosphate
Ethylcellulose
Gellan gum
Hydrogenated jojoba oil
Isocetyl alcohol, I. palmitate
Isopropyl isostearate
Isostearyl erucate, I. isostearate
Isostearyl neopentanoate
Maltodextrin
Methylcellulose
Microcrystalline cellulose
Octyl palmitate
Octyldodecyl myristate
bis-Octyldodecyl stearoyl dimer dilinoleate
Octyldodecyl stearoyl stearate
Oleyl oleate
PEG-20, -75, -150, -240, -350
Polydipentene
Polyethylene: P., micronized
PTFE
PVP
Sorbitol
Synthetic wax
Tapioca dextrin
Tridecyl behenate, T. neopentanoate
Tridecyl stearoyl stearate
Trisodium HEDTA

Biol. polymer

Distarch phosphate
Dog rose (*Rosa canina*) seed extract
Hydrogen peroxide
Kojic acid
Mulberry (*Morus nigra*) extract
Sanguisorba root extract

Botanical

Acacia
Acacia farnesiana extract
Agrimony (*Agrimonia eupatoria*) extract
Alder (*Alnus firma*) extract
Alfalfa (*Medicago sativa*) extract
Algae (*Ascophyllium nodosum*) extract
Algae (*Lithothamnium calcareum*) extract
Aloe barbadensis, A.b. extract
Aloe capensis extract
Alpine Veronica extract
Althea officinalis extract
Angelica archangelica extract
Anise (*Pimpinella anisum*) extract
Apple (*Pyrus malus*) extract
Apricot (*Prunus armeniaca*) extract
Arnica montana extract
Artemisia capillaris extract
Artichoke (*Cynara scolymus*) extract
Asafetida (*Ferula assa foetida*) extract
Asiasarum sieboldii extract

Functions

Asparagus officinalis extract	Cucumber (Cucumis sativus) extract	Jasmine (Jasminum officinale) extract
Astragalus sinicus extract	Cypress (Cupressus sempervirens) extract	Job's tears (Coix lacryma-jobi) extract
Avens (Geum rivale) extract	Dandelion (Taraxacum officinale) extract	Jojoba (Buxus chinensis) seed powder
Avocado (Persea gratissima) extract	Date (Phoenix dactylifera) extract	Juniperus communis extract
Balm mint (Melissa officinalis) extract, oil extract	Dead Sea Mud, Sulis	Kelp (Macrocystis pyrifera) extract
Banana (Musa sapientum) extract	Dog rose (Rosa canina) hips extract	Kiwi (Actinidia chinensis) fruit extract, seed oil
Barley (Hordeum vulgare) extract	Dyer's broom extract	Kola (Cola acuminata) extract
Basil (Ocimum basilicum) extract	Eleuthero ginseng (Acanthopanax senticosus) extract	Krameria triandra extract
Bearberry (Arctostaphylos uva-ursi) extract	Elm (Ulmus campestris) extract	Lady's mantle (Alchemilla vulgaris) extract
Bee pollen extract	Eucalyptus (Eucalyptus globulus) extract	Lady's Thistle (Silybum marianum) extract
Beet (Beta vulgaris) extract	Eucalyptus globulus oil	Laurel (Laurus nobilis) extract
Betaglucan	Eucommia ulmoides extract	Lavender (Lavandula angustifolia) extract, water
Bilberry (Vaccinium myrtillus) extract	Euphrasia officinalis extract	Lemon (Citrus medica limonum) extract, juice
Biotinlavonoids	Evening primrose (Oenothera biennis) extract, oil	extract, peel extract
Birch (Betula alba) bark extract, leaf extract	Everlasting (Helichrysum arvenarium) extract	Lemon bioflavonoids extract
Birch (Betula platyphylla japonica) extract	Fennel (Foeniculum vulgare) extract	Lemongrass (Cymbopogon schoenanthus) extract
Bitter orange (Citrus aurantium amara) extract, flower extract, peel extract	Fenugreek extract	Leopard flower (Belamcanda chinensis) root extract
Black cohosh (Cimicifuga racemosa) extract	Fermented rice (Oryza sativa) extract	Lettuce (Lactuca scariola sativa) extract
Black currant (Ribes nigrum) extract	Fern (Dryopteris filix-Mas) extract	Licorice (Glycyrrhiza glabra) extract
Black henna extract	Fig (Ficus carica) extract	Lilac (Syringa vulgaris) extract
Black poplar (Populus nigra) extract	Fir needle extract	Linden (Tilia argentea) extract
Black walnut (Juglans nigra) extract	Fumitory (Fumaria officinalis) extract	Linden (Tilia cordata) extract, water
Bladderwrack (Fucus vesiculosus) extract	Gardenia florida extract	Loquat (Eriobotrya japonica) leaf extract
Borage (Borago officinalis) extract	Garlic (Allium sativum) extract	Maidenhair fern extract
Buckthorn (Frangula alnus) extract	Gelidium cartilagineum	Magnolia kobus extract
Burdock (Arctium lappa) extract	Gentian (Gentiana lutea) extract	Mallow extract
Burdock (Arctium minus) root extract	Geranium maculatum extract	Mandragora officinarum extract
Burnet extract	Ginger root extract	Mannan
Butcherbroom (Ruscus aculeatus) extract	Ginkgo biloba extract	Marigold
Cabbage rose (Rosa centifolia) extract	Ginseng (Panax ginseng) extract	Marine silt
Calamus (Acorus calamus) extract	Glycyrrhetic acid	Matricaria (Chamomilla recutita) extract
Calendula officinalis extract	Glycyrrhizic acid	Meadowsweet (Spiraea ulmaria) extract
Caper (Capparis spinosa) extract	Glycyrrhizin, ammoniated	Melon (Cucumis melo) extract
Capsicum frutescens extract, C.f. oleoresin	Golden seal (Hydrastis canadensis) root extract	MEA iodine
Caraway (Carum carvi) extract	Goldthread (Coptis japonica) extract	Mistletoe (Viscum album) extract
Carrageenan (Chondrus crispus)	Gutu kola extract	Mugwort (Artemisia princeps) extract, water
Carrot (Daucus carota) extract	Grape (Vitis vinifera) distillate, extract	Mulberry (Morus alba) root extract
Carrot (Daucus carota sativa) oil	Grape (Vitis vinifera) leaf, seed extract	Mulberry (Morus bombysis) root extract
Cassia aunculata extract	Grape skin extract	Mushroom extract
Celandine (Chelidonium majus) extract	Grapefruit (Citrus grandis) peel extract	Myrrh (Commiphora myrrha) extract
Chamomile (Anthemis nobilis) extract, oil	Green bean (Phaseolus lunatus) extract	Nasturtium extract
Chaparral (Larrea mexicana) extract	Ground Ivy (Glechoma hederacea) extract	Neroli extract
Cherry (Prunus speciosa) leaf extract	Guarana (Paullinia cupana) extract	Nettle (Urtica dioica) extract
Cherry bark, C.b. extract	Harpagophytum procumbens extract	Oak (Quercus) bark extract
Chestnut (Castanea sativa) extract	Hayflower extract	Oak root extract
Chinese hibiscus (Hibiscus rosa-sinensis) extract	Hazel (Corylus avellana) nut extract	Oat (Avena sativa) bran, bran extract, flour, protein
Chlorella vulgaris extract	Henna (Lawsonia inermis) extract	Oat flower
Cimicifuga foetida rhizome extract	Hesperidin, H. methyl chalcone	Olive (Olea europaea) extract, leaf extract
Cinchona succirubra extract	Hibiscus sabdariffa extract	Onion (Allium cepa) extract
Citroflavonoid, water soluble	Hibiscus syriacus extract	Orange blossom extract
Citrus bioflavonoid complex	High beta-glucan barley flour	Orange (Citrus aurantium dulcis) flower extract, peel extract
Clary extract	Honeysuckle (Lonicera caprifolium) extract	Pansy (Viola tricolor) extract
Clove (Eugenia caryophyllus) extract	Honeysuckle (Lonicera japonica) leaf extract	Papaya (Carica papaya) extract
Clover (Trifolium pratense) extract	Hops (Humulus lupulus) extract	Parsley (Carum petroselinum) extract
Cnidium officinale rhizome extract, C.o. water	Horse chestnut (Aesculus hippocastanum) extract	Passion flower (Passiflora laurifolia) fruit extract
Coffee (Coffea arabica) bean extract	Horseshadish (Cochlearia armoracia) extract	Passionflower (Passiflora incarnata) extract
Colloidal oatmeal	Horsetail extract	Pea (Pisum sativum) extract
Coltsfoot (Tussilago farfara) leaf extract	Houttuynia cordata extract	Peach (Prunus persica) extract, leaf extract
Comfrey (Symphytum officinale) leaf extract	Hyacinth (Hyacinthus orientalis) extract	Pelargonium capitatum extract
Condurango extract	Hydrocotyl (Centella asiatica) extract	Pellitory (Parietaria officinalis) extract
Coneflower (Echinacea angustifolia) extract	Hydrolyzed oat protein, soy flour	Pennyroyal (Mentha pulegium) extract
Corallina officinalis	Hypericum perforatum extract	Peony (Paeonia albaflora) extract
Corchorus olitorius extract	Hyssop (Hyssopus officinalis) extract	Peony (Paeonia obovata) root extract
Coriander (Coriandrum sativum) extract	Indian cress (Tropaeolum majus) extract	Peppermint (Mentha piperita) extract, oil
Corn (Zea mays) cob powder, silk extract	Isodonis Japonicus extract	Perilla ocymoides extract
Corn poppy (Papaver rhoeas) extract	Ivy extract	Periwinkle (Vinca minor) extract
Cornflower (Centaurea cyanus) extract	Japanese angelica (Angelica acutiloba) extract, water	PEG-80 jojoba acid/alcohol
Couch (Agropyron repens) grass	Japanese hawthorn (Crataegus cuneata) extract	PEG-120 jojoba acid/alcohol
Crataegus monogyna extract		
Criihum maritimum extract		

CAMPO Siddha Herbs Extracts

Jothi-Pul (Glow-grass) Siddha Extract for High content bio-available
 Natural Radium for anti Kaposi Sarcoma Skin Treatment.
 Roma-Maram (Hairy Tree) Siddha Extract for ANTI-SENSE DNA
 Topical applications for HIV+ Lymph-nodes
 Siddha Extracts for post-Chemotherapy Skin-Damage Treatment



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Functions

Puffia paniculata extract
Phellodendron amurense extract
 Phospholipids
Pimenta (*Pimenta officinalis*) extract
Pine (*Pinus sylvestris*) cone, needle extract
Pineapple (*Ananas sativus*) extract
Plantain (*Plantago major*) extract
 Pollen extract
 Pongamol
Poria Cocos extract
Pueraria lobata extract
 Queen of the meadow extract
Quillaja saponaria extract
Quince (*Pyrus cydonia*) seed extract
Quinoa (*Chenopodium quinoa*) extract
Raspberry (*Rubus*) extract
Rauwolfia (*Serpentina*) extract
 Red clover
Rehmannia chinensis extract
Restharrow (*Ononis spinosa*) extract
Rhododendron chrysanthum extract
Rhodophyceae extract
Rhubarb (*Rheum palmatum*) extract
Rice (*Oryza sativa*) bran extract
Rice fatty acid
Rose (*Rosa multiflora*) extract
Rosemary (*Rosmarinus officinalis*) extract
Rubia tinctorum extract
Safflower (*Carthamus tinctorius*) extract
Sage (*Salvia officinalis*) extract, water
Sambucus nigra berry extract, extract
Sandalwood (*Santalum album*) extract
Sanguinaria canadensis extract
Saponaria officinalis extract
Sasa veitchii extract
Saxifraga sarmenosa extract
Scabiosa arvensis extract
Scutellaria baicalensis root extract
 Silk extract
Silver fir (*Abies pectinata*) extract
Sisal (*Agave rigida*) extract
Slippery elm extract
Soapberry (*Sapindus mukurossi*) extract
Sophora angustifolia extract
Sophora flavescens root extract
Sophora japonica extract
Soybean (*Glycine soja*) extract
Soy (*Glycine soja*) germ extract, protein, sterol
Spearmint (*Mentha viridis*) extract, oil
Spinach (*Spinacia oleracea*) extract
Spiraea ulmaria extract
Sunflower (*Helianthus annuus*) seed extract
Sweet almond (*Prunus amygdalus dulcis*) extract
Sweet cherry (*Prunus avium*) extract
Sweet cicely (*Anthriscus cerefolium*) extract
Sweet clover (*Melilotus officinalis*) extract
Sweet violet (*Viola odorata*) extract
Swertia chirata extract
Tea (*Camellia sinensis*) extract
Thistle (*Chicus benedictus*) extract
Thyme (*Thymus vulgaris*) extract
Tomato (*Solanum lycopersicum*) extract
Tormentil (*Potentilla erecta*) extract
Tuberose (*Polianthes tuberosa*) extract
Turmeric (*Curcuma longa*) extract
Valerian (*Valeriana officinalis*) extract
Walnut (*Juglans regia*) extract, leaf extract
Water Lily (*Nymphaea alba*) root extract
Watercress (*Nasturtium officinale*) extract

Wheat (*Triticum vulgare*) extract, protein
Wheat (*Triticum vulgare*) germ extract
 Wheat bran lipids
 White ginger (*Hedychium coronarium*) extract
 White nettle (*Lamium album*) extract
Wild agrimony (*Potentilla anserina*) extract
Wild cherry (*Prunus serotina*) bark extract
Wild indigo (*Baptista tinctoria*)
Wild marjoram (*Origanum vulgare*) extract
Willow (*Salix alba*) bark extract, extract
Willow (*Salix alba*) leaf extract
Witch hazel (*Hamamelis virginiana*) extract
Yarrow (*Achillea millefolium*) extract
Yeast (*Saccharomyces cerevisiae*) extract (Faer)
Yucca vera extract
Zanthoxylum piperitum extract
Zedoary (*Curcuma zedoaria*) oil

Buffer

Ammonium carbonate, A. phosphate
 Calcium hydroxide, C. phosphate
 Citric acid
 Ethanolamine HCl
 Glycine
 Phosphoric acid
 Potassium phosphate
 Potassium sodium tartrate
 Sodium acetate, S. citrate
 Sodium lactate, S. phosphate
 Succinic acid
 Tromethamine

Carrier

Acrylates copolymer, spherical powder
 Arginine
 Caprylic/capric triglyceride
 Caprylic/capric/lauric triglyceride
 Caprylic/capric/linoleic triglyceride
 Caprylic/capric/oleic triglycerides
 Ceteareth-20
 Coconut (*Cocos nucifera*) oil
 Cyclodextrin
 Dipropylene glycol
 Glyceryl caprylate, G. caprylate/caprate
 Hydrated silica
 Liposomes
 Magnesium silicate
 Methyl propanediol
 PEG-8/SMDI copolymer
 Potassium chloride
 PPG-12/SMDI Copolymer
 PPG-31/SMDI Copolymer
 Propylene carbonate, P. glycol
 Serum albumin
 Sodium carboxymethyl beta-glucan
 Sodium chloride
 Sodium magnesium silicate
 Tapioca dextrin

Chelators

beta-Alanine diacetic acid
 Calcium disodium EDTA
 Disodium EDTA, -copper
 EDTA
 HEDTA
 Malic acid
 Monostearyl citrate
 Pentasodium pentetate
 Pentetic acid

Phytic acid
 Potassium aspartate
 Sodium aspartate
 Sodium dihydroxyethylglycinate
 Sodium hexametaphosphate
 Tetrahydroxypropyl ethylenediamine
 Tetrasodium EDTA
 Tripotassium EDTA
 Trisodium EDTA, HEDTA

Cell stimulant

Aesculus chinensis extract
Artemisia apiacea extract
Astrocaryum muru, A. tucuma extract
Bacris gasipaes extract
Borjaoa sorbilis extract
Calendula amurensis extract
Chrysanthemum morifolium extract
Coccinea indica extract
Comfrey (*Symphitum officinale*) leaf extract
Condurango extract
Dandelion (*Taraxacum officinale*) extract
Echites glauca extract
Equisetum arvense extract
Eucalyptus (*Eucalyptus globulus*) extract
Eupatorium fortunei extract
Euterpe precatoria extract
Ficus racemosa extract
 Glycoproteins
Hierochloe odorata extract
Horse chestnut (*Aesculia hippocastanum*) extract
Inga edulis extract
Kadsura heteliloca extract
Ligustrum lucidum extract
Lysimachia foenum-graecum extract
Mauritia flexosa extract
Maximilliana regia extract
Melaleuca bracteata, M. symphyocarp extract
Nelumbium speciosum extract
Ocimum basilicum extract, O. santum extract
Paulownia imperialis extract
Pfaffia spp. extract
Pterocarpus marsupianus extract
Rubus thunbergii extract
Selinum spp. extract
Shorea robusta extract
Xanthoxylum bunganum extract

Cleansing

Birch (*Betula alba*) leaf extract
Lemongrass (*Cymbopogon schoenanthus*) extract
Oat (*Avena sativa*) bran extract
Passion flower (*Passiflora laurifolia*) fruit extract
Witch hazel (*Hamamelis virginiana*) extract
Yarrow (*Achillea millefolium*) extract

Conditioner

Acetamide MEA
 6-(N-Acetylamino)-4-oxyhexyltrimonium chloride
 Acrylamidopropyltrimonium chloride/acrylamide copolymer
 Adipic acid/dimethylaminohydroxypropyl diethylene triamine copolymer
 AMP-isostearoyl hydrolyzed wheat protein
 Apricot (*Prunus armeniaca*) kernel oil
 Behenalkonium chloride
 Behenamidopropyl dihydroxypropyl dimonium chloride
 Behenamidopropyl ethyldimonium ethosulfate
 Behenamidopropyl PG-dimonium chloride

CAMPO Siddha Herb Extracts
CAMPO Rainforest Herb Extracts & Oils
CAMPO Australasian Herbs & Tea Tree Extracts
CAMPO Chinese & Japanese Herb Extracts



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Functions

Behenamidopropyl dimethylamine behenate	Hydrolyzed sweet almond protein	Polymethacrylamidopropyltrimonium chloride
Behenamine oxide	Hydrolyzed wheat protein/PVP copolymer	Polyoxyethylene dihydroxypropyl linoleaminium chloride
Behenyl PG-trimonium chloride	Hydrolyzed wheat protein polysiloxane polymer	Polyquaternium-2, -5, -6, -11, -16
Behenyl betaine	Hydroxycetyl hydroxyethyl dimonium chloride	Polyquaternium-17, -18, -24, -29, -44
Benzyltrimonium hydrolyzed collagen	Hydroxyproline	Potassium dimethicone copolyol panthenyl phosphate
Canolamidopropyl betaine	Hydroxypropyl chitosan	Potassium lauroyl collagen amino acids
Capramide DEA	Hydroxypropyl guar hydroxypropyltrimonium chloride	Potassium lauroyl hydrolyzed soy protein
Caprylic/capric/lauric triglyceride	Hydroxypropyl-bis-isostearylamidopropyl dimonium chloride	Potassium lauroyl wheat amino acids
Caprylyl pyrrolidone	Hydroxypropyl bis-stearyldimonium chloride	Potassium stearyl hydrolyzed collagen
Cassia auriculata extract	Hydroxypropyltrimonium gelatin	PPG-5 lanolin alcohol ether
Cetamine oxide	Hydroxypropyltrimonium hydrolyzed keratin	PPG-9 diethylmonium chloride
Cetearalkonium chloride	H.h. silk	PPG-20 lanolin alcohol ether
Chitosan PCA	Hydroxypropyltrimonium hydrolyzed wheat protein	Proline
Citric acid	Isopropyl hydroxybutyramide dimethicone copolyol	Propylene glycol stearate
Cocamidopropyl dimethylamine, C.d. lactate, C.d. propionate	Isopropyl lanolate	PVP/dimethiconylacrylate/polycarbamyl/polyglycol ester
Cocamidopropyl dimethylaminohydroxypropyl hydrolyzed collagen	Isostearamidopropyl betaine, I. dimethylamine	PVP/dimethylaminoethylmethacrylate copolymer
Cocamidopropyl dimonium	Isostearamidopropyl dimethylamine gluconate	PVP/dimethylaminoethylmethacrylate/polycarbamyl/polyglycol ester
hydroxypropylhydrolyzed collagen	Isostearamidopropyl dimethylamine glycolate	PVP/hydrolyzed wheat protein copolymer
Cocamidopropyl ethyldimonium ethosulfate	Isostearamidopropyl dimethylamine lactate	Quaternium-22, -26, -33, -61, -62, -70, -80
Cocamidopropyl PG-dimonium chloride, C.P.c. phosphate	Isostearamidopropyl ethyldimonium ethosulfate	Quaternium-76 hydrolyzed collagen
Coco-morpholine oxide	Isostearamidopropyl laurylaceto dimonium chloride	Rapeseedamidopropyl benzylidimonium chloride
Coco/oleamidopropyl betaine	Isostearamidopropyl morpholine, I.m. lactate	Rapeseedamidopropyl epoxypropyl dimonium chloride
Cocodimonium hydroxypropyl hydrolyzed hair keratin	Isostearamidopropyl morpholine oxide	Rapeseedamidopropyl ethyldimonium ethosulfate
Cocodimonium hydroxypropyl hydrolyzed rice protein	Isostearamidopropyl PG-dimonium chloride	Rice peptide
Cocodimonium hydroxypropyl hydrolyzed silk	Isostearaminopropylalkonium chloride	Ricinoleamidopropyl-dimonium ethosulfate
Cocodimonium hydroxypropyl hydrolyzed soy protein	Isostearyl hydrolyzed animal protein	Ricinoleamidopropyl betaine
Cocounit alcohol	Isostearylamidopropyl dihydroxypropyl dimonium chloride	Ricinoleamidopropyl dimethylamine lactate
N-Cocoyl-(3-amidopropyl)-N,N-dimethyl-N-ethyl ammonium ethyl sulfate	Lactoglobulin	Ricinoleamidopropyl ethyldimonium ethosulfate
Collagen phthalate	Lauramidopropyl dimethylamine	Ricinoleamidopropyltrimonium chloride
Dibehenyl/diarachidyl dimonium chloride	Lauramidopropyl PG-dimonium chloride, I.P.c. phosphate	Ricinoleamidopropyltrimonium ethosulfate
Dibehenylidimonium chloride	Lauramine oxide	Silicone quaternium-3, -4
Dicetyl dimonium chloride	Laurampho PG-glycinate phosphate	Silk amino acids
Didecyl dimonium chloride	Lauroyl hydrolyzed collagen, L.h. elastin	Sodium/TEA-lauroyl collagen amino acids
Dihydroxyethyl cocamine oxide	Lauroyl silk amino acids	Sodium/TEA-lauroyl hydrolyzed keratin
Dihydroxyethyl dihydroxypropyl stearamonium chloride	Lauryl methyl gluceth-10 hydroxypropyl-dimonium chloride	Sodium/TEA-lauroyl keratin amino acids
Dihydroxyethyl tallow glycinate	Lauryl phosphate, L. pyrrolidone	Sodium citrate
Dihydroxyethyl tallowamine oxide	Lauryldimonium hydroxypropyl hydrolyzed collagen, keratin, soy protein	Sodium cocoyl hydrolyzed soy protein
Dilauryl acetyl dimonium chloride	Linoleamidopropyl dimethylamine	Sodium hydrogenated tallow dimethyl glycinate
Dilinoamidopropyl dimethylamine	Milk amino acids	Sodium lauroyl collagen, keratin amino acids
Dimethyl hydrogenated tallowamine	Milk protein (Lactis proteinum)	Sodium lauroyl wheat amino acids
Dimethyl lauramine, D.I. isostearate	Myristalkonium chloride	Sodium stearamphoacetate
Dimethyl myristamine, soyamine, stearamine	Myristamidopropyl betaine, M. dimethylamine	Soluble keratin, wheat protein
Dimethylamidopropylamine dimerate	Myrtrimonium bromide	Soyamide DEA
Disodium hydrogenated cottonseed glyceride sulfosuccinate	Oat (Avena sativa) protein	Soyamidopropyl benzylidimonium chloride
Disodium laureth sulfosuccinate	Oleamide	Soyamidopropyl betaine, S. dimethylamine
Disodium lauroamphodiacetate	Oleamidopropyl betaine, O. dimethylamine	Soyamidopropyl ethyldimonium ethosulfate
Distearyl dimonium chloride	Oleamidopropyl dimethylamine hydrolyzed collagen	Soyethyl morpholinium ethosulfate
Ethyl ester of hydrolyzed keratin	Oleamidopropylamine oxide	Soyethyldimonium ethosulfate
N-Ethylether-bis-1,4-(N-isostearylamidopropyl)-N,N-dimethyl ammonium chlo	Oleamine	Stearamide MEA
Glutamic acid	Oleamine oxide	Stearamidoehtyl diethylamine, ethanolamine
Glycerol collagenate	Oleoyl sarcosine	Stearamidopropyl benzyl dimonium chloride
Glycine	Oleyl betaine	Stearamidopropyl ceteryl dimonium tosylate
Guar hydroxypropyltrimonium chloride	Oleyl dimethylamidopropyl ethonium ethosulfate	Stearamidopropyl dimethylamine stearate
Henna (Lawsonia inermis) extract	Palmitamidopropyl betaine	Stearamidopropyl ethyldimonium ethosulfate
Hydrogenated tallowamine oxide	Palmitamidopropyl dimethylamine	Stearamidopropyl morpholine lactate
Hydrogenated tallowtrimonium chloride	Palmitamine, P. oxide	Stearamidopropyl PG-dimonium chloride phosphate
Hydrolyzed conchiorin protein	Panthenyl hydroxypropyl stearidimonium chloride	Stearamine oxide
Hydrolyzed egg protein	PEG-2 milk solids	Stearidimonium hydroxypropyl hydrolyzed collagen, keratin
Hydrolyzed extensin	PEG-2 oleammonium chloride	Stearidimonium panthenol
Hydrolyzed fibronectin	PEG-3 lauramine oxide	Stearyl amidoethyl diethylamine
Hydrolyzed fish protein	PEG-5 stearyl ammonium lactate	Stearyltrimonium bromide
Hydrolyzed keratin	PEG-15 cococomonium chloride	Stearyl dimethicone
Hydrolyzed lactalbumin	PEG-15 cocopolyamine	Tallowamidopropyl dimethylamine
Hydrolyzed milk protein	PEG-15 tallowmonium chloride	Tetramethyl trihydroxy hexadecane
Hydrolyzed oats	PEG-27	TEA-cocoyl hydrolyzed collagen
Hydrolyzed reticulin	PEG-40	Trachea hydrolysate
Hydrolyzed soy protein	PEG-85 lanolin	Tricetylmonium chloride
	PEG-7000	Tridecyl salicylate
	Polydimethicone copolyol	Triethonium hydrolyzed collagen ethosulfate
		Wheat germamidopropylalkonium chloride
		Wheat germamidopropyl dimethylamine lactate

Functions

Rapeseed oil, ethoxylated high erucic acid
 Ricinoleyl alcohol
 Sodium ceteth-13-carboxylate
 Sodium lignosulfonate, S. polymethacrylate
 Sodium polynaphthalenesulfonate
 Sorbitan oleate
 Steareth-10
 Tricontanyl PVP
 Triisostearyl PEG-6 esters
 Trioctyldodecyl citrate

Emollient

Acetylated glycol stearate
 Acetylated hydrogenated lanolin
 Acetylated hydrogenated lard glyceride
 Acetylated hydrogenated vegetable glyceride
 Acetylated lanolin, A.I. alcohol
 Acetylated lard glyceride
 Acetylated monoglycerides
 Acetylated palm kernel glycerides
 Aleurites moluccana ethyl ester
 Allantoin
 Aluminum/magnesium hydroxide stearate
 AMP-isostearyl hydrolyzed soy protein
 Apricot (Prunus armeniaca) kernel oil
 Arachidyl behenate
 Argania spinosa oil
 Avocado (Persea gratissima) oil, unsaponifiables
 Avocado oil ethyl ester
 Babassu (Orbignya oleifera) oil
 Baryl isostearate, B. stearate
 Behenamidopropyl dihydroxypropyl dimonium chloride
 Behenoxy dimethicone
 Behenyl alcohol, B. behenate
 Behenyl erucate, B. isostearate
 Benzyl laurate
 Bladderwrack (Fucus vesiculosus) extract
 Borage (Borago officinalis) seed oil
 Borageamidopropyl phosphatidyl PG-dimonium chloride
 Brain extract
 Brazil nut (Bertholletia excelsa) oil
 Butyl myristate, oleate, stearate
 Butyloctanol
 Butyloctyl oleate
 C12-13, C12-16, C14-15 alcohols
 C12-15 alcohols octanoate
 C12-15 alkyl benzoate
 dl-C12-15 alkyl fumarate
 C12-15 alkyl lactate
 Camellia kissi oil
 Tea (Camellia sinensis) oil
 C10-30 cholesterol/lanosterol esters
 Canola oil
 Caprylic/capric triglyceride
 Caprylic/capric triglyceride PEG-4 esters
 Caprylic/capric/lauric triglyceride
 Caprylic/capric/linoleic triglyceride
 Caprylic/capric/oleic triglycerides
 Caprylic/capric/stearic triglyceride
 Caprylic/capric/succinic triglyceride
 Capsicum frutescens oleoresin
 Carrot (Daucus carota sativa) oil
 Cashew (Anacardium occidentale) nut oil
 Castor (Ricinus communis) oil
 Cetearyl behenate, C. candelillate
 Cetearyl isononanoate, C. octanoate
 Cetearyl palmitate, C. stearate
 Ceteth-10
 Cetostearyl stearate
 Cetyl C12-15 parath-9 carboxylate
 Cetyl acetate, C. alcohol
 Cetyl esters, C. lactate
 Cetyl myristate, C. octanoate
 Cetyl oleate, C. palmitate
 Cetyl PPG-2 isodeceth-7 carboxylate
 Cetyl ricinoleate, C. stearate

Cetyl stearyl octanoate
 Chia (Salvia hispanica) oil
 Cholesteric esters
 Cholesterol
 Cholesteryl/behenyl/octyldodecyl lauroyl glutamate
 Cholesteryl hydroxystearate
 Cholesteryl stearate
 Choleth-24
 C 18-70 Isoparaffin
 C10-18, C12-18 triglycerides
 C12-15 linear alcohols 2-ethylhexanoate
 Cocamidopropyl PG-dimonium chloride
 Cocoa (Theobroma cacao) butter
 Coco-caprylate/caprate
 Coco-rapeseedate
 Coconut (Cocos nucifera) oil
 Cocoyl hydrolyzed soy protein
 Collagen phthalate
 Colloidal oatmeal
 Comfrey (Symphytum officinale) leaf extract
 Corn (Zea mays) oil
 Corn pippy (Papaver rhoeas) extract
 Cottonseed (Gossypium) oil
 Cuttlefish extract
 Cyclomethicone
 Deceth-4 phosphate
 Decyl oleate
 Decyltetradecanol
 Dialkyldimethylpolysiloxane
 Dibutyl sebacate
 Dicapryl adipate
 Dicaprylyl ether, D. maleate
 Diethylene glycol diisononanoate
 Diethylene glycol dioctanoate
 bis-Diglyceryl/caprylate/caprate/isostearate/
 hydroxystearate/adipate
 bis-Diglyceryl/caprylate/caprate/isosteareth/
 stearate/hydroxystearate/adipate

Dihydroabietyl behenate
 Dihydroxyethyl tallowamine oleate
 Diisobutyl adipate
 Diisocetyl adipate, dodecanedioate
 Diisodecyl adipate
 Diisopropyl adipate, dimer dilinoleate
 Diisopropyl sebacate
 Diisostearyl trimethylolpropane siloxy silicate
 Diisostearyl adipate
 Diisostearyl dimer dilinoleate
 Diisostearyl fumarate, D. malate
 Dilinoleic acid
 Dimethicone
 Dimethicone copolyol
 Dimethicone copolyol acetate, D.c. almondate
 Dimethicone copolyol isostearate, D.c. lactate
 Dimethicone copolyol methyl ether
 Dimethicone copolyol phthalate
 Dimethicone propylethylenediamine behenate
 Dimethiconol stearate
 Dimethyl lauramine oleate
 Dioctyl adipate
 Dioctyl dimer dilinoleate
 Dioctylcyclohexane
 Dioctyldodecyl dimer dilinoleate
 Dioctyldodecyl dodecanedioate
 Dioctyl malate, D. sebacate, succinate
 Dipentaerythritol fatty acid ester
 Dipentaerythrityl hexacaprylate/hexacaprinate
 Dipentaerythrityl hexahydroxystearate/isostearate
 Distearyl dimethylamine dilinoleate
 Diuridecyl adipate
 Dog rose (Rosa canina) hips oil
 Egg (Ovom) yolk extract
 Emu (Dromiceus) oil
 Erucyl erucate
 Ethyl avocadoate
 Ethylhexyl isopalmitate

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OUR 78TH YEAR

Functions

2-Ethylhexyl isostearate	Isononyl isononanoate	Octyldodecanol
Ethyl linolenate, E. minkate	Isopenyldiol	Octyldodecyl behenate, O. benzoate
Ethyl morrhuate, E. myristate	Isopropyl avocadate	Octyldodecyl erucate, O. myristate
Ethyl oleate, E. olivate	Isopropyl C12-15-pareth-9-carboxylate	Octyldodecyl oleate, O. ricinoleate
Evening primrose (<i>Oenothera biennis</i>) extract, oil	Isopropyl isostearate	Octyldodecyl stearate
Glycereth-4,5-lactate	Isopropyl lanolate, I. linoleate	bis-Octyldodecyl stearoyl dimer dilinoleate
Glycereth-5 lactate	Isopropyl myristate, I. palmitate	Octyldodecyl stearoyl stearate
Glycereth-7 benzoate	Isopropyl PPG-2-isodeceth-7 carboxylate	Oleamine oxide
Glycereth-7 diisononanoate	Isopropyl stearate	Oleic/palmitoleic/linoleic glycerides
Glycereth-7 triacetate	Isosorbide laurate	Oleic alcohol
Glycereth-7 trioctanoate	Isostearic acid	Oleostearine
Glycereth-12, -26	Isostearyl alcohol	Oleyl alcohol, O. erucate, O. oleate
Glycerol tricaprylate/caprate	Isostearyl behenate, I. benzoate	Olive (<i>Olea europaea</i>) oil
Glyceryl adipate, G. dioleate	Isostearyl diglyceryl succinate	Orange (<i>Citrus aurantium dulcis</i>) peel wax
Glyceryl isostearate, G. lanolate	Isostearyl erucate, I. erucyl erucate	Orange roughly (<i>Hoplostethus atlanticus</i>) oil
Glyceryl linoleate, G. monopyrrolutamate	Isostearyl isostearate, I. lactate	Palm (<i>Elaeis guineensis</i>) oil
Glyceryl myristate, G. oleate	Isostearyl malate, I. myristate	Palm kernel glycerides
Glyceryl ricinoleate	Isostearyl neopentanoate, palmitate	Palmitic acid
Glyceryl triacetyl hydroxystearate	Isostearyl stearoyl stearate	Panthenyl triacetate
Glyceryl triacetyl ricinoleate	Isostearylamidopropyl dihydroxypropyl dimonium chloride	Partially hydrogenated canola oil
Glycosaminoglycans	Isotridecyl isononanoate	Partially hydrogenated soybean oil
Glycosphingolipids	Isotridecyl myristate	Peach (<i>Prunus persica</i>) extract
Gold of Plesure oil	Jojoba (<i>Buxus chinensis</i>) oil	Peanut (<i>Arachis hypogaea</i>) oil
Grape (<i>Vitis vinifera</i>) seed oil	Jojoba butter, J. esters	Pecan (<i>Carya illinoensis</i>) oil
Hazel (<i>Corylus avellana</i>) nut oil	Jojoba oil, synthetic	PEG-2 diisononanoate, P. dioctanoate
Helianthus annuus ethyl ester	Kukui (<i>Aleurites moluccana</i>) nut oil	PEG-2 milk solids
Hexadecyl isopalmitate	Lactamide DGA	PEG-4
Hexamethylcyclotrisiloxane	Laneth-10 acetate	PEG-4 diheptanoate, P. dilaurate
Hexyl laurate	Lanolin, L. acid	PEG-5 C8-12 alcohols citrate
Hexyldodecanol	Lanolin alcohol, L. oil	PEG-5 C14-18 alcohols citrate
Hexyldodecyl stearate	Lanolin, ultra anhydrous	PEG-5 hydrogenated castor oil
Honey extract	Lanolin wax	PEG-5 hydrogenated castor oil trisostearate
Hybrid safflower (<i>Carthamus tinctorius</i>) oil	Lanosterol	PEG-6
Hybrid sunflower (<i>Helianthus annuus</i>) oil	Lard glyceride	PEG-6 capric/caprylic glycerides
Hydrogenated C6-14 olefin polymers	Laureth-2, -3	PEG-7 glyceryl cocoate
Hydrogenated castor oil	Laureth-2 acetate, L. benzoate	PEG-8
Hydrogenated castor oil laurate	Laureth-2-octanoate	PEG-8 dilaurate, P. dioleate
Hydrogenated coconut oil	Lauric/palmitic/oleic triglyceride	PEG-8/SDMI copolymer
Hydrogenated cottonseed oil	Lauryl behenate, L. lactate	PEG-9 stearyl stearate
Hydrogenated C12-18 triglycerides	Lauryl phosphate	PEG-10 stearyl stearate
Hydrogenated lanolin	Lauryldimethylamine isostearate	PEG-12
Hydrogenated lanolin, distilled	Lesquerella fendleri oil	PEG-12 dioleate, P. palm kernel glycerides
Hydrogenated lecithin	Linoleic acid	PEG-15 cocamine oleate/phosphate
Hydrogenated milk lipids	Macadamia ternifolia nut oil	PEG-18
Hydrogenated mink oil	Maleated soybean oil	PEG-20
Hydrogenated palm kernel glycerides	Mango (<i>Mangifera indica</i>) oil, seed oil	PEG-20 hydrogenated castor oil isostearate
Hydrogenated palm oil	Mango kernel oil	PEG-20 hydrogenated castor oil trisostearate
Hydrogenated polyisobutene	Meadowfoam (<i>Limnanthes alba</i>) seed oil	PEG-20 hydrogenated lanolin
Hydrogenated soybean oil	Menhaden (<i>Brevoortia tyrannus</i>) oil	PEG-24 hydrogenated lanolin
Hydrogenated starch hydrolysate	Methyl acetyl ricinoleate	PEG-25 PABA, P. propylene glycol stearate
Hydrogenated tallow glyceride	Methyl gluceth-20	PEG-40 glyceryl laurate
Hydrogenated tallow glyceride lactate	Methyl gluceth-20 benzoate, M. g. distearate	PEG-40 hydrogenated castor oil isostearate
Hydrogenated turtle oil	Methyl hydroxystearate, M. ricinoleate	PEG-40 hydrogenated castor oil laurate
Hydrogenated vegetable glycerides	Microcrystalline wax	PEG-40 hydrogenated castor oil trisostearate
Hydrogenated vegetable oil	Mineral oil (<i>Paraffinum liquidum</i>)	PEG-40 jojoba oil
Hydrolyzed collagen	Mink oil	PEG-50 hydrogenated castor oil laurate
Hydrolyzed conchiorin protein	Musk rose (<i>Rosa moschata</i>) oil	PEG-50 hydrogenated castor oil trisostearate
Hydrolyzed keratin	Myreth-3	PEG-60 shea butter glycerides
Hydrolyzed mushroom (<i>Tricholoma matsutake</i>) extract	Myreth-3 caprate, M. laurate	PEG-70 mango glycerides
Hydrolyzed oat protein	Myreth-3 myristate, M. octanoate	PEG-75
Hydroxylated lanolin	Myristyl alcohol, M. lactate	PEG-75 lanolin, P. shea butter glycerides
Hydroxylated milk glycerides	Myristyl myristate, M. octanoate	PEG-75 shea butter glycerides
Hydroxystearic acid	Myristyl propionate, M. stearate	PEG-150
Illipe butter	Neatsfoot oil	PEG/PPG-17/6 copolymer
Isobutyl palmitate, I. stearate	Neem (<i>Melia azadirachta</i>) seed oil	Pentaerythrityl dioleate
Isocetyl behenate, I. octanoate	Neopentyl glycol dicaprate	Pentaerythrityl isostearate/caprate/caprylate/adipate
Isocetyl palmitate, I. salicylate	Neopentyl glycol dicaprate/dicaprylate	Pentaerythrityl stearate
Isocetyl stearate	Neopentyl glycol diisooctanoate	Pentaerythrityl stearate/caprate/caprylate/adipate
Isodeceth-2 cocoate	Neopentyl glycol dioctanoate	Pentaerythrityl tetraerythrityl tetraoctanoate
Isodecyl citrate, I. cocoate	Oat (<i>Avena sativa</i>) bran extract, extract, flour	Pentaerythrityl tetralaurate, P. tetraoctanoate
Isodecyl isononanoate, I. laurate	Ocacosanyl stearate	Pentaerythrityl tetraoleate, P. tetrapalargonate
Isodecyl neopentanoate	Octyl cocoate	Pentaerythrityl tetraoctanoate
Isodecyl octanoate, I. oleate	Octyl hydroxystearate, O. isononanoate	Pentaerythrityl tetraoleate
Isodecyl stearate	Octyl neopentanoate, O. octanoate	Perfluorodecalin
Isododecane	Octyl oleate, O. palmitate	Perfluoropolydimethylisopropyl ether
Isocicosane	Octyl pelargonate, O. stearate	Petrolatum
Isohexadecane	Octyldodecanol	Phenethyl dimethicone
		Phenyl dimethicone, P. methicone, P. trimethicone

Functions

Phytantriol	PPG-8/SMDI copolymer	Propylene glycol myristyl ether acetate
Pistachio (<i>Pistacia vera</i>) nut oil	PPG-9	Propylene glycol stearate, SE
Placental enzymes	PPG-9-buteth-12	Pumpkin (<i>Cucurbita pepo</i>) seed oil
Pollen extract	PPG-9 butyl ether	Quinoa (<i>Chenopodium quinoa</i>) oil
Poloxamer 105 benzoate	PPG-10 butanediol, P. cetyl ether	Rapeseed (<i>Brassica campestris</i>) oil
Poloxamer 182 dibenzoate	PPG-10 methyl glucose ether	Rice (<i>Oryza sativa</i>) bran oil, bran wax
Polybutene	PPG-10 oleyl ether	Rice fatty acid
Polydecene	PPG-11 stearyl ether	Safflower (<i>Carthamus tinctorius</i>) oil
Polydimethicone copolyol	PPG-12-buteth-16	Salmon (<i>Salmo</i>) egg extract
Polyethylene glycol	PPG-12-PEG-50 lanolin	Sesame (<i>Sesamum indicum</i>) oil
Polyglyceryl-2 diisostearate, P. tetraisostearate	PPG-12-PEG-65 lanolin oil	Shark liver oil
Polyglyceryl-2 trisostearate	PPG-12/SMDI Copolymer	Shea butter (<i>Butyrospermum parkii</i>)
Polyglyceryl-3 diisostearate, P. oleate	PPG-14 butyl ether	Shea butter (<i>Butyrospermum parkii</i>) extract
Polyglyceryl-3 stearate	PPG-15 butyl ether, P. stearyl ether	Shea butter, ethoxylated
Polyglyceryl-6 dioleate	PPG-15 stearyl ether benzoate	Shorea stenoptera butter
Polyglyceryl-10 decaoleate, P. decastearate	PPG-16 butyl ether	Silybum marianum ethyl ester
Polyglyceryl-10 tetraoleate	PPG-18 butyl ether	Sitostearyl acetate
Polyisobutene	PPG-20	Skin lipids
Polyisobutene/isohexapentacontahexane	PPG-20-buteth-30	Slippery elm extract
Polyisobutene/isooctahexacontane	PPG-20 cetyl ether	Sodium C8-16 isoalkylsuccinyl lactoglobulin sulfonate
Polyisobutene/isopentacontaoctane	PPG-24-glycereth-24	Sodium carboxymethyl beta-glucan
Polyisoprene	PPG-26	Sodium ceteth-13-carboxylate
Polyoxyethylene polyoxypropylene glycol	PPG-27 glyceryl ether	Sodium dimethicone copolyol acetyl methyltaurate
Polyquaternium-2	PPG-28-buteth-35	Sodium glyceryl oleate phosphate
Polyisiloxane polyalkylene copolymer	PPG-30	Sodium hyaluronate, S. polymethacrylate
Polysorbate 40	PPG-30 cetyl ether	Sorbeth-20
Potassium dimethicone copolyol phosphate	PPG-40 butyl ether	Sorbitan isostearate, S. palmitate
PPG-2-buteth-3	PPG-50 cetyl ether, P. oleyl ether	Sorbitan sesquioleate, S. sesquisteate
PPG-2 lanolin alcohol ether	PPG-51/SMDI Copolymer	Sorbitan trioleate
PPG-2 myristyl ether propionate	PPG-53 butyl ether	Soybean (<i>Glycine soja</i>) oil
PPG-3 hydrogenated castor oil	Propylene glycol ceteth-3 acetate	Spermaceti
PPG-3 myristyl ether	Propylene glycol dicaprylate	Sphingolipids
PPG-5-buteth-7	Propylene glycol dicaprylate/dicaprate	Squalene
PPG-5-laureth-5	Propylene glycol diisostearate, P.g. dioctanoate	Stearamidopropyl cetearyl dimonium tosylate
PPG-5 butyl ether	Propylene glycol dipelargonate	Steareth-4 stearate
PPG-5 lanolin wax	Propylene glycol isoceteth-3 acetate	Stearic acid, S. hydrazide
PPG-5 pentaerythrityl ether	Propylene glycol isostearate, P.g. laurate	Stearoxy dimethicone
PPG-7-buteth-10	Propylene glycol myristate	

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New V-Series Cerasynt emulsifiers give you the choice

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Functions

Stearoxymethiconedimethicone copolymer
 Stearyl behenate, S. benzoate
 Stearyl dimethicone, S. erucate
 Stearyl heptanoate, S. propionate
 Stearyl stearate
 Stearyl stearyl stearate
 Sucrose cocoate
 Sunflower (Helianthus annuus) seed oil
 Sweet almond (Prunus amygdalus dulcis) oil
 Sweet cherry (Prunus avium) pit oil
 Synthetic jojoba oil
 Synthetic wax
 Tallow
 Tetradecyleicosyl stearate
 Tocopheryl acetate
 Tricaprin
 Tricaprylin
 Tricaprylyl citrate
 Tricholoma matsutake extract
 Tridecyl behenate, T. cocoate
 Tridecyl erucate, T. neopentanoate
 Tridecyl octanoate, T. stearate
 Tridecyl stearyl stearate
 Tridecyl trimellitate
 Trihexyldecyl citrate
 Triisocetyl citrate
 Triisostearin
 Triisostearyl citrate
 Triisostearyl trilinoleate
 Trilaurin
 Trilinolein
 Trimethylolpropane tricaprylate/tricaprate
 Trimethylolpropane tricocoate
 Trimethylolpropane trilaurate
 Trimyrstin
 Trioctanoin
 Trioctyldodecyl citrate
 Triolein
 Tripalmitin
 Tripropylene glycol citrate
 Tristearin
 Triundecanoin
 Vegetable oil
 Walnut (Juglans regia) oil
 Wheat (Triticum vulgare) germ oil

Emulsifier

Acetylated hydrogenated lard glyceride
 Acetylated hydrogenated vegetable glyceride
 Acetylated monoglycerides
 Acrylates/C10-C30 alkyl acrylate crosspolymer
 Acrylates/vinyl isodecanoate crosspolymer
 Acrylic acid/acrylonitril copolymer
 2-Aminobutanol
 Ammonium acrylates/acrylonitril copolymer
 Arachidyl alcohol
 Beeswax
 Behenamidopropyl dihydroxypropyl dimonium chloride
 Beheneth-5 -10 -20 -30
 Behenic acid
 Behenyl betaine
 Borageamidopropyl phosphatidyl PG-dimonium chloride
 Butyloctanol
 C12-20 acid PEG-8 ester
 C18-36 acid
 Calcium dodecylbenzene sulfonate
 Calcium protein complex

Calcium stearate
 Calcium stearyl lactylate
 Capramide DEA
 Caprylic/capric acid
 Caprylic/capric glycerides
 Castor oil, ethoxylated
 Cetalkonium chloride
 Cetareth-2 -4 -5 -6
 Cetareth-2 phosphate
 Cetareth-3 phosphate
 Cetareth-8 -10 -11 -12
 Cetareth-10 phosphate
 Cetareth-15 -17 -20 -25
 Cetareth-27 -29 -30 -34
 Cetearyl alcohol
 Cetearyl glucoside
 Ceteth-2 -4 -6 -10 -12 -13
 Ceteth-16 -20 -25 -30 -33
 Cetethyldimonium bromide
 Cetrimonium chloride
 Cetyl dimethicone copolyol
 Cetyl phosphate
 Cholesterol
 Choleth-10 -15 -24
 Cocamide DEA, C. MEA
 Cocamidopropyl dimethylamine
 Cocamidopropyl PG-dimonium chloride phosphate
 Cocamine
 Coceth-7 carboxylic acid
 Coconut acid
 Copper protein complex
 Cottonseed glyceride
 C12-13 pareth-3 -4 -9 -23
 C16-18 pareth-3 -5.5 -13 -19
 Cyclodextrin
 Decaglycerol monodistearate
 DEA-cetareth-2-phosphate
 DEA-cetyl phosphate
 DEA-cyclocarboxypropylolate
 DEA-oleth-3 phosphate
 DEA-oleth-5-phosphate
 DEA-oleth-10 phosphate
 DEA-oleth-20-phosphate
 Dicetareth-10 phosphoric acid
 Diethanolamine
 Diethylaminoethyl stearate
 Diglyceryl stearate malate
 Dihydrocholeth-15 -20 -30
 Dihydrogenated tallow phthalic acid amide
 Dilauryl acetyl dimonium chloride
 Dilinoleamidopropyl dimethylamine dimethicone copolyol phosphate
 Dilinoleic acid
 Dimethicone copolyol almondate
 Dimethicone copolyol isostearate
 Dimethicone copolyol laurate
 Dimethicone copolyol methyl ether
 Dimethicone copolyol olive
 Dimethicone copolyol phthalate
 Dipalmitolethyl hydroxyethylmonium methosulfate
 Dipropylene glycol
 Disodium hydrogenated cottonseed glyceride sulfosuccinate
 Disodium ricinoleamido MEA-sulfosuccinate
 Disodium stearyl sulfosuccinate
 Disodium sulfosuccinamide
 Distearyl phthalic acid amide

N-Dodecyl-N,N-dimethyl-N-(dodecyl acetate) ammonium chloride
 Dodecylphenol-ethylene oxide condensate
 Egg (Ovum) yolk extract
 Emulsifying wax NF
 Ethoxylated fatty alcohol
 N-Ethylether-bis-1,4-(N-isostearylamidopropyl-N,N-dimethyl ammonium chlo
 Ethyl hexanediol
 Euglena gracilis polysaccharide
 Glycereth-26 phosphate
 Glyceryl caprylate, G. caprylate/caprate
 Glyceryl citrate/lactate/linoleate/oleate
 Glyceryl cocoate, G. dilaurate
 Glyceryl dilaurate, G. dioleate
 Glyceryl distearate, G. hydroxystearate
 Glyceryl isostearate, G. lanolate
 Glyceryl laurate, G. linoleate
 Glyceryl mono-di-tri-caprylate
 Glyceryl myristate, G. oleate
 Glyceryl palmitate, G. ricinoleate
 Glyceryl ricinoleate SE
 Glyceryl stearate, G. stearate citrate
 Glyceryl stearate lactate
 Glyceryl stearate SE
 Glyceryl undecylenate
 Glycol distearate, G. oleate
 Glycol palmitate, G. stearate
 Glycol stearate SE
 Glycolamide stearate
 Glycosphingolipids
 Hydrogenated coco-glycerides
 Hydrogenated cottonseed glyceride
 Hydrogenated lanolin
 Hydrogenated lecithin
 Hydrogenated palm oil
 Hydrogenated soy glyceride
 Hydrogenated tallow glycerides
 Hydrogenated tallow glycerides citrate
 Hydroxycetyl phosphate
 Hydroxylated lanolin
 Hydroxylated lecithin
 Hydroxyoctacosanyl hydroxystearate
 Hydroxypropyl-bis-isostearylamidopropyl dimonium chloride
 Isocetareth-8 stearate
 Isoceteth-10 stearate
 Isoceteth-20
 Isocetyl alcohol
 Isolaureth-6
 Isostearamidopropyl dimethylamine glucoate
 Isostearamidopropyl dimethylamine glycolate
 Isostearamidopropyl laurylacetodimonium chloride
 Isosteareth-2 -3 -10 -12 -20 -22 -50
 Isosteareth-2-octanoate
 Isosteareth-10 stearate
 Isostearic acid
 Isostearyl diglyceryl succinate
 Isostearylamidopropyl dihydroxypropyl dimonium chloride
 Karaya (Stericulia urens) gum
 Laneth-5 -10 -15 -16 -20 -40
 Laneth-10 acetate
 Lanolin
 Lanolin alcohol
 Lanolin, ultra anhydrous
 Lanolin wax
 Lauramide DEA, L. MEA

3 BETTER IDEAS.**1 BETTER SOURCE.**

CARBOPOL

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Functions

Lauramidopropyl dimethylamine	PEG-5 lanolate, P. oleamine	PEG-20 lanolin, P. laurate
Lauramidopropyl PG-dimonium chloride	PEG-5 soy sterol, P. soyamine	PEG-20 oleate
Laureth-1 -2 -3 -4 -5	PEG-5 stearamine, P. stearate	PEG-20 methyl glucose sesquistearate
Laureth-2 octanoate	PEG-5 tallow amine	PEG-20 sorbitan beeswax
Laureth-3 phosphate	PEG-6 capric/caprylic glycerides	PEG-20 sorbitan isostearate
Laureth-4 carboxylic acid	PEG-6 cocamide	PEG-20 sorbitan trisostearate
Laureth-5 carboxylic acid	PEG-6 C12-14 ether	PEG-20 sorbitan trioleate
Laureth-6 -7 -9 -11 -12	PEG-6 dilaurate, P. dioleate	PEG-20 stearate, P. tallow amine
Laureth-11 carboxylic acid	PEG-6 distearate, P. isostearate	PEG-23 oleate, P. stearate
Laureth-16 -20 -23 -25 -30	PEG-6 lauramide, P. laurate	PEG-24 hydrogenated lanolin
Lauryl PCA	PEG-6 oleate, P. palmitate	PEG-25 castor oil
Laurylmethicone copolyol	PEG-6 sorbitan beeswax	PEG-25 phytosterol
Lecithin	PEG-6 sorbitan laurate	PEG-25 propylene glycol stearate
Linoleamidopropyl PG-dimonium chloride	PEG-6 sorbitan oleate	PEG-25 soy sterol, P. stearate
phosphate	PEG-6 sorbitan stearate	PEG-29 castor oil
Lithium stearate	PEG-6 stearate	PEG-30 castor oil
Magnesium sulfate hepta-hydrate	PEG-6-32	PEG-30 dipolyhydroxystearate
Maleated soybean oil	PEG-6-32 stearate	PEG-30 glyceryl cocoate
Methoxy PEG-17/dodecyl glycol copolymer	PEG-7 glyceryl cocoate	PEG-30 glyceryl isostearate
Methyl gluceth-20 distearate	PEG-7 hydrogenated castor oil	PEG-30 glyceryl laurate
Methyl glucose dioleate, M. g. sesquistearate	PEG-7 oleate	PEG-30 glyceryl oleate
Methyl glucose sesquistearate	PEG-7.5 tallowamine	PEG-30 glyceryl stearate
MEA-laureth sulfate	PEG-8	PEG-30 hydrogenated castor oil
Myreth-3 -4 -7	PEG-8 beeswax, P. castor oil	PEG-30 lanolin
Myreth-3 myristate	PEG-8 C12-14 ether	PEG-30 sorbitan tetraoleate
Myristamidopropyl dimethylamine	PEG-8 dilaurate, P. dioleate	PEG-32 dilaurate, P. dioleate
Nonoxynol-1 -2 -4 -5 -6 -7	PEG-8 distearate	PEG-32 distearate, P. laurate
Nonoxynol-8 -9 -10 -11 -12 -13	PEG-8 glyceryl laurate	PEG-32 oleate, P. stearate
Nonoxynol-14 -15 -18 -20 -30 -40 -50	PEG-8 laurate, P. oleate	PEG-33 castor oil
Nonyl nonoxynol-5 -10	PEG-8, P. tallate	PEG-35 castor oil, P. stearate
Oat (Avena sativa) flour	PEG-9 castor oil	PEG-40 castor oil
Octoxynol-1 -3 -5 -8 -10	PEG-9 diisostearate	PEG-40 glyceryl isostearate
Octoxynol 16, 30, 40	PEG-9 dioleate, P. distearate	PEG-40 glyceryl laurate
2-Octyl dodecyl alcohol	PEG-9 laurate, P. oleate	PEG-40 glyceryl triisostearate
Ocryldodecanol	PEG-9 stearate	PEG-40 hydrogenated castor oil
Ocryldodeceth-20 -25	PEG-10 castor oil, P. cocamine	PEG-40 hydrogenated castor oil PCA isostearate
Oleamide DEA	PEG-10 coconut oil esters	PEG-40 sorbitan diisostearate
Oleamidopropyl dimethylamine	PEG-10 C12-18 alcohols	PEG-40 sorbitan lanolate
Oleamine oxide	PEG-10 dioleate	PEG-40 sorbitan tetraoleate
Oleic acid	PEG-10 glyceryl isostearate	PEG-40 stearate
Oleth-2 -3 -4 -5 -6 -7 -8 -9	PEG-10 hydrogenated castor oil	PEG-40/dodecyl glycol copolymer
Oleth-10 -12 -15 -20 -23	PEG-10 hydrogenated castor oil triisostearate	PEG-42 babassu glycerides
Oleth-25 -30 -40 -50	PEG-10 lanolate	PEG-44 sorbitan laurate
Oleth 13	PEG-10 polyglyceryl-2 laurate	PEG-45 palm kernel glycerides
Oleth-2 phosphate	PEG-10 sorbitan laurate	PEG-45 safflower glycerides
Oleth-3 phosphate	PEG-10 soy sterol, P. stearamine	PEG-50 lanolin, P. stearamine
Oleth-5 phosphate	PEG-10 stearate	PEG-50 stearate
Oleth-10 phosphate	PEG-11 babassu glycerides	PEG-60 almond glycerides
Oleth-20 phosphate	PEG-11 castor oil	PEG-60 castor oil
Palm acid	PEG-12 dilaurate, P. dioleate	PEG-60 corn glycerides
Palmitamidopropyl dimethylamine	PEG-12 distearate	PEG-60 glyceryl triisostearate
Palmitic acid	PEG-12 glyceryl dioleate	PEG-60 hydrogenated castor oil
PEG-2 cocamine, P. distearate	PEG-12 laurate, P. oleate	PEG-60 hydrogenated castor oil isostearate
PEG-2 hydrogenated tallow amine	PEG-12 stearate, P. tallate	PEG-60 hydrogenated castor oil triisostearate
PEG-2 laurate, P. laurate SE	PEG-14 avocado glycerides	PEG-60 shea butter glycerides
PEG-2 oleamine, P. oleate	PEG-15 castor oil	PEG-60 sorbitan tetraoleate
PEG-2 soyamine, P. stearamine	PEG-15 cocamine	PEG-70 mango glycerides
PEG-2 stearate, P. stearate SE	PEG-15 glyceryl isostearate	PEG-75
PEG-3 cocamide	PEG-15 glyceryl laurate	PEG-75 castor oil, P. dilaurate
PEG-3 C12-C18 alcohols	PEG-15 glyceryl ricinoleate	PEG-75 dioleate, P. distearate
PEG-3 glyceryl isostearate	PEG-15 oleamine, P. oleate	PEG-75 lanolin, P. laurate
PEG-3 glyceryl triisostearate	PEG-15, P. stearamine	PEG-75 oleate
PEG-3 glyceryl tristearate	PEG-15 tallow amine	PEG-75 shea butter glycerides
PEG-3 lanolate, P. sorbitan oleate	PEG-15 tallow polyamine	PEG-75 shorea butter glycerides
PEG-3 stearate	PEG-16	PEG-75 stearate
PEG-4 dioleate, P. diisostearate	PEG-16 hydrogenated castor oil	PEG-80 sorbitan laurate
PEG-4 dilaurate, P. distearate	PEG-16 soy sterol	PEG-90 stearate
PEG-4 glyceryl distearate	PEG-18 stearate	PEG-100 castor oil
PEG-4 laurate, P. oleate	PEG-20 almond glycerides	PEG-100 hydrogenated castor oil
PEG-4 stearate	PEG-20 castor oil, P. dilaurate	PEG-100 lanolin, P. stearate
PEG-4 stearyl stearate	PEG-20 dioleate, P. distearate	PEG-120 distearate
PEG-4 tallate	PEG-20 glyceryl laurate	PEG-150 dilaurate, P. dioleate
PEG-5 castor oil, P. cocamine	PEG-20 glyceryl oleate	PEG-150 distearate, P. lanolin
PEG-5 C12-C18 alcohols	PEG-20 glyceryl stearate	PEG-150 laurate, P. oleate
PEG-5 glyceryl isostearate	PEG-20 glyceryl triisostearate	PEG-150 stearate
PEG-5 glyceryl sesquioleate	PEG-20 glyceryl tristearate	PEG-200 castor oil
PEG-5 glyceryl stearate	PEG-20 hydrogenated castor oil	PEG-200 glyceryl stearate
PEG-5 glyceryl triisostearate	PEG-20 hydrogenated lanolin	PEG-200 hydrogenated castor oil

Functions

PEG-200 laurate, P. oleate
 PEG-400 laurate
 Phosphate esters
 Phosphated amine oxides
 Phospholipids
 Poloxamer 101, 115, 122, 123, 124
 Poloxamer 181, 182, 184, 185, 235, 237
 Poloxamer 238, 334, 338, 407
 Polyglyceryl-2 oleate
 Polyglyceryl-2 polyhydroxystearate
 Polyglyceryl-2 sesquiisostearate
 Polyglyceryl-2 stearate
 Polyglyceryl-2-PEG-4-distearate
 Polyglyceryl-2-PEG-4 stearate
 Polyglyceryl-3 diisostearate, P. dioleate
 Polyglyceryl-3 distearate
 Polyglyceryl-3 methylglucose distearate
 Polyglyceryl-3 oleate, P. polyricinoleate
 Polyglyceryl-3 stearate
 Polyglyceryl-4 oleate, P. stearate
 Polyglyceryl-6 dioleate, P. distearate
 Polyglyceryl-6 laurate, P. myristate
 Polyglyceryl-6 oleate, P. polyricinoleate
 Polyglyceryl-6 stearate
 Polyglyceryl-8 oleate
 Polyglyceryl-10 decanoate
 Polyglyceryl-10 diisostearate
 Polyglyceryl-10 dioleate, P. dipalmitate
 Polyglyceryl-10 distearate, P. isostearate
 Polyglyceryl-10 laurate, P. linoleate
 Polyglyceryl-10 mixed fatty acids
 Polyglyceryl-10 myristate
 Polyglyceryl-10 oleate
 Polyglyceryl-10 pentastearate
 Polyglyceryl-10 stearate
 Polyglyceryl-10 tetraoleate
 Polyglyceryl-10 trioleate
 Polyoxyethylene polyoxypropylene glycol
 Polyquaternium-5, -11
 Polysorbate 20, 21, 40, 60, 61
 Polysorbate 65, 80, 81, 85
 Potassium alginate, P. cetyl phosphate
 Potassium laurate, P. myristate
 Potassium tallate
 PPG-1-PEG-9 lauryl glycol ether
 PPG-2-ceteareth-9
 PPG-3 isosteareth-9
 PPG-3 PEG-6 oleyl ether
 PPG-5-buteth-7
 PPG-5-ceteth-20
 PPG-5-ceteth-10 phosphate
 PPG-8 oleate
 PPG-10 cetyl ether phosphate
 PPG-12-PEG-50 lauridin
 PPG-15 stearyl ether
 PPG-24-buteth-27
 PPG-25 laureth-25
 PPG-26-buteth-26
 PPG-26 oleate
 PPG-36 oleate
 Propylene glycol alginate, P.g. dioleate
 Propylene glycol hydroxystearate
 Propylene glycol laurate, P.g. ricinoleate
 Propylene glycol ricinoleate SE
 Propylene glycol stearate
 Propylene glycol stearate, SE
 Quaternium-33
 Rapeseedamidopropyl ethyldimonium ethosulfate
 Rice (Oryza sativa) bran wax
 Ricinoleamide DEA
 Ricinoleic acid
 Saponins
 Selenium protein complex
 Silicone quaternium-5, -6
 Sodium acrylates/vinyl isodecanoate crosspolymer
 Sodium caproyl lactate
 Sodium carboxymethyl cellulose
 Sodium cetyl sulfate

Sodium C12-15 pareth-15 sulfonate
 Sodium isostearoyl lactylate
 Sodium laureth-17 carboxylate
 Sodium lauroyl lactylate
 Sodium lauryl sulfate
 Sodium nonoxynol-6 phosphate
 Sodium octyl sulfate
 Sodium oleate
 Sodium oleyl sulfate
 Sodium phosphate
 Sodium stearyl lactylate
 Sorbeth-20
 Sorbitan isostearate, S. laurate
 Sorbitan oleate, S. palmitate
 Sorbitan sesquiisostearate
 Sorbitan sesquioleate, S. sesquisteate
 Sorbitan stearate, S. trisostearate
 Sorbitan trioleate, S. tristearate
 Soyamidopropyl dimethylamine
 Soyamine
 Stearamide DEA
 Stearamide DIBA-stearate
 Stearamidoethyl diethylamine
 Stearamidopropyl dimethylamine lactate
 Stearamidopropyl PG-dimonium chloride
 Stearamine
 Stearamine oxide
 Steareth-2, -4, -6, -7, -10, -11, -13
 Steareth-2 phosphate
 Steareth-15, -20, -21, -30, -100
 Stearic acid
 Sucrose cocoate, S. distearate
 Sucrose stearate
 Synthetic beeswax
 Tallow glyceride, acetylated hydrogenated
 Tallowamide DEA

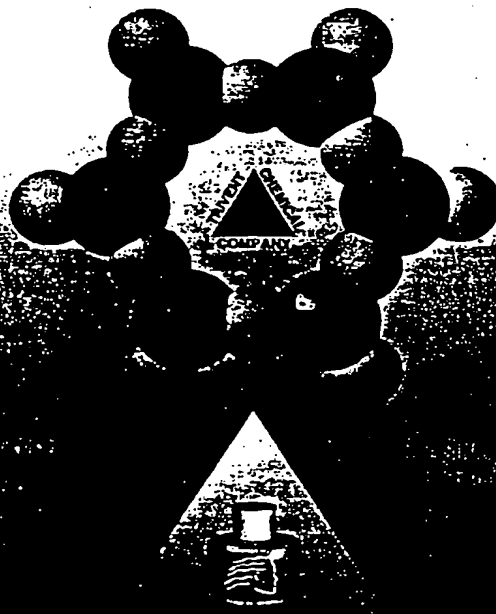
Tallowamidopropyl dimethylamine
 Talloweth-6
 Tetrasodium dicarboxyethyl stearyl
 sulfosuccinamide
 TEA-acrylates/acrylonitril copolymer
 Tissue extract
 Triceteareth-4 phosphate
 Trideceth-3, -5, -6, -7, -8
 Trideceth-9, -10, -12, -15
 Tridecyl ethoxylate
 Triethanolamine
 Trilaureth-4 phosphate
 Triolein
 Trisodium HEDTA
 Tristearin

Enzyme

Fermented vegetable
 Ganoderma lucidum oil
 Lipase
 Papain
 Soy (Glycine soja) protein
 Superoxide dismutase

Essential oil

Aesculus chinensis extract
 Artemisia apiacea extract
 Brassica rapa-depressa extract
 Caraway (Carum carvi) oil
 Cardamon (Elettaria cardamomum) oil
 Clove (Eugenia caryophyllus) oil
 Eclipta alba extract
 Eucalyptus globulus oil
 Eupatorium fortunei extract
 Euterpe precatoria extract
 Hierochloa odorata extract
 Kadsura heteroloca extract



Trivent Chemical Company, Inc.

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Functions

Ligustrum lucidum extract
 Lysimachia foenum-graecum extract
 Melaleuca bracteata extract
 Melaleuca hypericifolia extract
 Melaleuca symphyocarp extract
 Melaleuca uncinata extract
 Melaleuca wilsonii extract
 Nasturtium sinensis extract
 Nelumbium speciosum extract
 Paulownia imperialis extract
 Rosemary (Rosmarinus officinalis) oil
 Selinum spp. extract
 Trichomonas japonica extract
 Withania somniferum extract
 Yuzu oil
 Ziziphus jujuba extract

Exfoliant

Apricot (Prunus armeniaca) kernel powder
 Glycolic acid
 Jojoba (Buxus chinensis) seed powder
 Lactic acid
 Papain
 PEG 11-Avocado Glycerdies
 Willow (Salix alba) bark extract

Fiber

Corn (Zea mays) cob powder
 Nylon-66
 Oat (Avena sativa) bran, meal
 Rayon

Film former

Acetylated lanolin
 Acrylates/hydroxyesters acrylates copolymer
 Acrylates/octylarylamide copolymer
 Acrylates copolymer
 Alkylated polyvinylpyrrolidone
 Ammonium acrylates/acrylonitrogens copolymer
 Betaglucon
 Bladderwrack (Fucus vesiculosus) extract
 Carboxymethylchitosan
 N,O-Carboxymethylchitosonium
 Chitosan lactate
 Collagen
 Collagen phthalate
 Colloidal oatmeal
 Desamido collagen
 Diisostearyl trimethylolpropane siloxy silicate
 DMHF
 Ethyl ester of hydrolyzed silk
 Ethylcellulose
 Gellan gum
 Glycerin/diethylene glycol/adipate crosspolymer
 High beta-glucan barley flour
 Hydrolyzed collagen
 Hydrolyzed keratin
 Hydrolyzed oat protein
 Hydrolyzed pea protein
 Hydrolyzed reticulon
 Hydrolyzed RNA
 Hydrolyzed silk
 Hydrolyzed soy protein
 Hydrolyzed wheat protein
 Hydrolyzed wheat protein/dimethicone copolyol
 phosphate copolymer
 Hydrolyzed wheat protein/PVP copolymer
 Hydroxypropylcellulose
 Hydroxypropyltrimonium gelatin
 Jojoba (Buxus chinensis) oil
 Lactoglobulin
 Myristoyl hydrolyzed collagen
 Nitrocellulose
 Oat (Avena sativa) extract, protein
 Polyethylene, ionomer
 Polyquaternium-6, -7, -11, -22, -39
 Polyvinyl acetate, P-alcuhol
 Procollagen

PVM/MA decadiene crosspolymer
 PVP/Dimethiconylacrylate/polycarbamyl/
 polyglycol ester
 PVP/dimethylaminoethylmethacrylate copolymer
 PVP/dimethylaminoethylmethacrylate/
 polycarbamyl/polyglycol ester
 PVP/eicosene copolymer
 PVP/hexadecene copolymer
 PVP/hydrolyzed wheat protein copolymer
 Rice peptide
 Sericin
 Shea butter (Butyrospermum parkii)
 Shellac
 Sodium C12-15 parath-7 sulfonate
 Sodium hyaluronate
 Soluble collagen
 Soluble keratin
 Soluble wheat protein
 TEA-acrylates/acrylonitrogens copolymer
 Tosylamide/epoxy resin
 Tricontanyl PVP
 Triethonium hydrolyzed collagen ethosulfate
 Wheat peptide

Fixative

Acrylates copolymer
 Adipic acid/dimethylaminohydroxypropyl
 diethylene triamine copolymer
 AMP-acrylates copolymer
 Hydrolyzed zein
 Methacryloyl ethyl betaine/acrylates copolymer
 Methyl rosinat
 Polyquaternium-4, -10, -29
 PPG-20 methyl glucose ether
 Sodium polystyrene sulfonate

Flavor (aroma)

Benzaldehyde
 Caraway (Carum carvi) oil
 Cardamon (Elettaria cardamomum) oil
 Cinnamon (Cinnamomum casia) oil
 Clove (Eugenia caryophyllus) oil
 Ethyl vanillin
 Eucalyptus globulus oil
 Flavor (aroma)
 Glutamic acid
 Glycyrrhetic acid
 Glycyrrhizic acid
 Glycyrrhizin, ammoniated
 Methyl salicylate
 Orange (Citrus aurantium dulcis) oil
 Peppermint (Mentha piperita) oil
 Rosemary (Rosmarinus officinalis) oil
 Sodium glycyrrhizinate
 Thymol
 Vanillin

Foam booster

Alkyldimethylamine oxide
 Babassuamidopropyl betaine
 Babassuamidopropylamine oxide
 Caprylyl pyrrolidone
 Carrageenan (Chondrus crispus)
 Cocamide DEA, C. MIPA
 Cocamidopropyl betaine
 Cocamidopropyl dimethylamine lactate
 Cocamidopropyl hydroxysultaine
 Coco-betaine
 Coco/oleamidopropyl betaine
 Cocoyl amido hydroxy sulfo betaine
 Cocoyl monoethanolamide ethoxylate
 DEA-hydrolyzed lecithin
 Dimethyl lauramine
 Disodium cocamido MEA-sulfosuccinate
 Disodium cocoamphodiacetate
 Disodium lauramido MEA-sulfosuccinate
 Disodium laureth sulfosuccinate
 Lauramide MIPA

Lauramidopropyl betaine
 Lauryl betaine
 Myristamidopropyl dimethylamine dimethicone
 copolyol phosphate
 Myristamine oxide
 Octyldodecyl benzoate
 Oleamide DEA, O. MIPA
 Oleyl betaine
 Palm kernelamide DEA
 PEG-3 lauramine oxide
 PPG-15 stearyl ether benzoate
 PEG-7000
 Sodium cocoamphoacetate
 Sodium cocoyl isethionate
 Sodium laureth sulfate
 Sodium lauroyl wheat amino acids
 Sodium octoxynol-2 ethane sulfonate
 Soyamidopropyl betaine
 Tallowamide MEA

Foam stabilizer

Babassuamidopropylamine oxide
 Behenamine oxide
 Caprylyl pyrrolidone
 Cetamine oxide
 Cocamide DEA, C. MEA, C. MIPA
 Cocamidopropyl betaine
 Cocamidopropyl hydroxysultaine
 Cocamidopropyl lauryl ether
 Cocamidopropylamine oxide
 Cocamine oxide
 Dihydroxyethyl C12-15 alkoxypropylamine oxide
 Dihydroxyethyl cocamine oxide
 Dihydroxyethyl tallowamine oxide
 Erucamidopropyl hydroxysultaine
 Hydroxypropyl methylcellulose
 Isostearamide DEA
 Lauramide DEA, L. MEA
 Lauramidopropylamine oxide
 Lauramine oxide
 Laureth-10
 Lauric-linoleic DEA
 Lauroyl-linoleoyl diethanolamide
 Lauroyl-myristoyl diethanolamide
 Lauryl pyrrolidone
 Linoleamide MEA
 Myristamide DEA, M. MEA
 Oleamide MEA
 Palmitamide MEA
 PEG-3 lauramide
 PEG-4 oleamide
 Ricinoleamide MEA
 Sesamide DEA
 Wheat germamide DEA

Foamer

Ammonium laureth sulfate
 Ammonium laureth-5 sulfate
 Ammonium laureth-12 sulfate
 Ammonium lauryl sulfate, A. I. sulfosuccinate
 Ammonium myreth sulfate
 Ammonium nonoxynol 4 sulfate
 Capryl caprylylglucoside
 Cetyl betaine
 Cocamide
 Cocamidopropyl dimethylamine
 Cocamidopropyl dimethylamine lactate
 DEA-laureth sulfate
 DEA lauryl sulfate
 Decyl glucoside
 Disodium caproamphodiacetate
 Disodium caproamphodipropionate
 Disodium capryloamphodiacetate
 Disodium cocoamphodipropionate
 Disodium lauroamphodiacetate
 Disodium lauroamphodipropionate
 Disodium lauryl sulfosuccinate
 Disodium oleamide MEA-sulfosuccinate

Functions

Disodium oleamid MIPA-sulfosuccinate
Disodium PEG-4 cocoamid MIPA-sulfosuccinate
Isostearamidopropylamine oxide
Lauryl glucoside
Methyl gluceth-20
MEA-laureth sulfate
Mixed isopropanolamines myristate
MIPA-lauryl sulfate
PEG-80 sorbitan laurate
PEG lauryl ether sulfate
Potassium cocoate, P. lauryl sulfate
Quillaia saponaria extract
Sodium caproamphacetate
Sodium capryloamphacetate
Sodium capryloamphohydroxypropylsulfonate
Sodium cocoamphacetate
Sodium cocoamphopropionate
Sodium C12-15 pareth-25 sulfate
Sodium C12-15 pareth-3 sulfonate
Sodium C12-15 pareth-15 sulfonate
Sodium C14-16 olefin sulfonate
Sodium deceth sulfate
Sodium laureth-2 sulfate
Sodium laureth-3 sulfate
Sodium laureth-7 sulfate
Sodium lauriminodipropionate
Sodium lauryl ether sulfosuccinate
Sodium lauryl sulfate, S. I. sulfacetate
Sodium lauryl sulfosuccinate
Sodium magnesium laureth sulfate
Sodium myreth sulfate, S. myristyl sulfate
Sodium trideceth sulfate
Sodium tridecyl sulfate
TEA-dodecylbenzenesulfonate
TEA-laureth sulfate
TEA-lauroyl collagen amino acids
TEA-lauroyl keratin amino acids
TEA-lauryl sulfate
TEA-palm kernel sarcosinate
Wheat germamidopropyl betaine
Yucca vera extract

Fragrance
Chamaecyparis obtusa oil
Orange (Citrus aurantium dulcis) oil
Peppermint (Mentha piperita) oil
Phenethyl alcohol

Fragrance solvent
Benzyl benzoate
Diethyl phthalate
Triacetin
Triethyl citrate

Fungicide
Astrocaryum murumuru extract
Azadirachta indica extract
Captan
Diiodomethyltolylsulfone
Ficus racemosa extract
Hexetidine
Ligusticum jeholense extract
Mauritia flexosa extract
Melaleuca symphyocarp extract
Melia australasica extract
Melia azadirachta extract
Mushroom (Cordyceps sabolifera) extract
Mushroom (Coriolus versicolor) extract
Sodium undecylenate
Tea tree (Melaleuca alternifolia) oil
Thiabendazole
Undecylenamide MEA
Zinc undecylenate
Ziziphus jujuba extract

Gellant
Acrylic acid/acrylonitril copolymer
Agar
Alginate

Aluminum distearate, A. tristearate
Ammonium acrylates/acrylonitril copolymer
Behenic acid
Calcium alginate
Carbomer
Carboxymethylchitosan
N,O-Carboxymethylchitosonium
Carrageenan (Chondrus crispus)
Ceresin
Cetearyl candelilla
Dibenzylidene sorbitol
Ethylene/acrylic acid copolymer
Ethylene/VA copolymer
Gellan gum
Hexanediol behenyl beeswax
Hydrogenated jojoba oil
Hydrogenated jojoba wax
Hydroxystearic acid
Jojoba wax
Laneth-5, -15
Montmorillonite
Myreth-3-octanoate
Octacosanyl stearate
Oleth-3 phosphate
Oleth-10 phosphate
Poloxamer 105, 123, 124, 185, 235
Poloxamer 237, 238, 338, 407
Polyethylene
Polyethylene, oxidized
Polyquaternium-31
Potassium alginate, P. chloride
Sodium nonoxynol-6 phosphate
Sodium tallowate
Synthetic beeswax
TEA-acrylates/acrylonitril copolymer
Tribehenin

Glosser
C18-36 acid glycol ester
Diphenyl dimethicone
Methyl gluceth-10
Octyldodecyl lactate
Phenyl methicone, P. trimethicone
Polyglyceryl-2 dioleate
Polyisobutene
Polyisobutene/isohexapentacontahexane
Polyisobutene/isooctahexacontane
Polymethacrylamidopropyltrimonium chloride
PPG-10 methyl glucose ether
PPG-36 oleate
Tea (Camellia sinensis) oil
Tribehenin

Hair care
Gentiana scabra extract
Maidenhair fern extract
Nicotinamide
Nicotinic acid
Paeonia lactiflora extract
Watercress (Nasturtium officinale) extract

Hair conditioner
Amino bispropyl dimethicone
Amoldimethicone
AMPD-isostearyl hydrolyzed collagen
Aqua Ichihammol
Babassu (Orbignya oleifera) oil
Babassuamidopropylammonium chloride
Behenamidopropyl dimethylamine
Behenamidopropyl hydroxyethyl dimonium chloride
Behentrimonium chloride
Biotin
Bishydroxyethyl biscetyl malonamide
Borageamidopropyl phosphatidyl PG-dimonium chloride
Brazil nut (Bertholletia excelsa) oil

Cetearyl trimonium methosulphate
Ceriumonium bromide, C. chloride
Cetyl pyridinium chloride
Chia (Salvia hispanica) oil
Chrysanthemum morifolium extract
Cichona succirubra extract
Cocamidopropyl dimethylamine propionate
Coccinea indica extract
Cocodimonium hydroxypropyl hydrolyzed collagen
Cocodimonium hydroxypropyl hydrolyzed keratin
Cocodimonium hydroxypropyl silk amino acids
Cocodimonium hydroxypropyl hydrolyzed wheat protein
Cocodimonium hydroxypropylhydroxyethyl cellulose
Cocotrimonium chloride
Collagen amino acids
Cyclomethicone
L-cysteine HCL
Dibenzylidimonium methosulphate
Dicyldimonium chloride
Dicocodimonium chloride
Dihydroxyethyl tallowamine oleate
Dimethicone
Dimethicone copolyol acetate, D. c. almondate
Dimethicone copolyol amine
Dimethicone copolyol bishydroxyethylamine
Dimethicone copolyol isostearate, D. c. laurate
Dimethicone copolyol olive
Dimethicone hydroxypropyl trimonium chloride
Dimethyl lauramine dimer dilinoleate
Dioleamidoethyl hydroxyethylmonium methosulfate
Dipalmitoylethyl hydroxyethylmonium methosulfate
Diphenyl dimethicone
Ditalowdimonium chloride
N-Dodecyl-N,N-dimethyl-N-(dodecyl acetate) ammonium chloride
Entada phaseoloides extract
Ethyl ester of hydrolyzed animal protein
Gelatin
Ginseng hydroxypropyltrimonium chloride butylene glycol
Hematin
Honey (Mel)
Hydrolyzed collagen
Hydrolyzed hair keratin
Hydrolyzed vegetable protein
Hydrolyzed wheat protein/dimethicone copolyol acetyl copolymer
Hydrolyzed wheat protein hydroxypropyl polysiloxane
Hydroxyethyl cetyltrimonium phosphate
Hydroxypropyltrimonium hydrolyzed collagen
Hydroxypropyl trimonium hydrolyzed wheat protein polysiloxane copolymer
Hyssop (Hyssopus officinalis) extract
Inga edulis extract
Isostearamidopropylamine oxide
Isostearyl hydrolyzed collagen
Keratin amino acids
Kiwi (Actinidia chinensis) fruit extract
Kola (Cola acuminata) extract
Laminaria japonica extract
Lauritrimonium chloride
Lauryl hydroxypropyl trimonium polysiloxane copolymer
Lauryldimethylamine isostearate
Lauryldimonium hydroxypropyl hydrolyzed collagen
Lauryldimonium hydroxypropyl hydrolyzed wheat protein
Linoleamidopropyl dimethylamine dimer dilinoleate
Linoleamidopropyl dimethylamine
Lysimachia foenum-graecum extract
Melaleuca hypericifolia extract
Ocimum santum extract
Olealkonium chloride

Functions

<p>Oleyl dimethylamidopropyl ethonium ethosulfate Palmitamidodecanediol Panthenyl ethyl ether Paulownia imperialis extract Peach (Prunus persica) leaf extract PEG-2 cocomonium chloride PEG-120 jojoba acid/alcohol PG-hydroxycellulose lauryldimonium chloride PG-hydroxyethylcellulose cocodimonium chloride PG-hydroxyethylcellulose lauryldimonium chloride PG-hydroxyethylcellulose stearyldimonium chloride Phenyl trimethicone Phospholipids Phytantriol Polyoxyethylene polyoxypropylene glycol Polypropylene glycol Polyquaternium-4, -6, -7, -10 Polyquaternium-22, -28, -39 PPG-5-ceteth-10 phosphate Propyltrimonium hydrolyzed collagen Propyltrimonium hydrolyzed soy protein Propyltrimonium hydrolyzed wheat protein Quaternium-18, -75, -81, -82 Quaternium-79 hydrolyzed keratin Quaternium-79 hydrolyzed silk Sambucus nigra extract, oil Sesamidopropalkonium chloride Silicone quaternium-1, -8 Sodium cocoamphoacetate Sodium cocoyl hydrolyzed collagen Sodium polystyrene sulfonate N-Soya-(3-amidopropyl)-N,N-dimethyl-N-ethyl ammonium ethyl sulfate Steapyrium chloride Stearalkonium chloride Stearamidopropyl dimethylamine Steardimonium hydroxypropyl hydrolyzed wheat protein Steartrimonium chloride Steartrimonium hydroxyethyl hydrolyzed collagen N-Stearyl-(3-amidopropyl)-N,N-dimethyl-N-ethyl ammonium ethyl sulfate Stenocalyx micallii extract Sulfur Tallowbenzylidimethylammonium chloride, hydrogenated Tallowtrimonium chloride Tea (Camellia sinensis) oil TEA-cocoyl hydrolyzed soy protein Thenoyl methionate Trimethylsilylamodimethicone Wheat amino acids</p> <p>Hair set resin polymer Acrylates/acrylamide copolymer Acrylates/PVP copolymer Acrylates/hydroxyesters acrylates copolymer Acrylates/octylarylamide copolymer AMP-acrylates copolymer Butylester of PVM-MA copolymer Carboxylated vinylacetate terpolymer Diglycol/CHDM/isophthalates/SIP copolymer Eclipta alba extract Ethyl ester of PVM/MA copolymer Hydroxypropyl chitosan Isopropyl ester of PVM/MA copolymer Octylacrylamide/acrylates/butylaminoethyl methacrylate copolymer Polymethacrylamidopropyltrimonium chloride Polypropylene glycol oligosuccinate PVP PVP/dimethylaminoethylmethacrylate copolymer PVP/Polycarbamyl polyglycol ester PVP/VA copolymer PVP/VA-vinyl propionate copolymer Sodium polyacrylate</p>	<p>VA/butyl maleate/isobornyl acrylate copolymer VA/crotonates/vinyl neodecanoate copolymer VA/crotonates/vinyl propionate copolymer VA/crotonates copolymer Vinyl caprolactam/PVP/ dimethylaminoethylmethacrylate copolymer</p> <p>Hair sheen Maidenhair fern extract Tetrabutoxypropyl methicone</p> <p>Hair waving Ammonium thioglycolate, A. thiolactate Argania spinosa oil L-cysteine HCL Cystine Diammonium dithiodiglycolate Dilauryl thioldipropionate Ethanolamine sulfite, E. thioglycolate Ethanolamine thiolactate Glyceryl thioglycolate Hydroxymethyl dioxazabicyclooctane Jojoba esters Monoethanolamine thiolactate Shea butter, ethoxylated Sodium thioglycolate Thioglycerin Thioglycolic acid Thiolactic acid</p> <p>Humectant Acetamide MEA Acetyl monoethanolamine 6-(N-Acetylaminol)-4-oxyhexyltrimonium chloride Adenosine phosphate Ammonium lactate Atelocollagen Calcium pantothenate Calcium stearyl lactylate Carboxymethyl chitin Carboxymethyl chitosan succinamide Chitosan PCA Cholesteryl hydroxystearate Collagen amino-polysiloxane hydrolyzate Colloidal oatmeal Copper PCA methylsilanol Dimethicone copolyol laurate Dipotassium glycyrrhizinate Ethyl ester of hydrolyzed silk Fatty quaternary amine chloride complex Glucose glutamate Glycereth-4,5-lactate Glycereth-7, -12, -26 Glycerin Honey extract Hydrogenated passion fruit oil Hydrolyzed casein Hydrolyzed fibronectin Hydrolyzed glycosaminoglycans Hydrolyzed oat protein Hydrolyzed silk Hydrolyzed soy protein Hydroxypropyl chitosan Hydroxypropyltrimonium hydrolyzed casein Hydroxypropyltrimonium hydrolyzed silk Hydroxypropyltrimonium hydrolyzed soy protein Hydroxypropyltrimonium hydrolyzed wheat protein Keratin amino acids Lactamide DGA, MEA Lactamidopropyl trimonium chloride Lactic acid Lactose Lauroyl lysine Maltitol Mannitol Methyl gluceth-10, -20 Natto gum Oat (Avena sativa) extract, protein Panthenol</p>	<p>Panthenyl ethyl ether PCA PEG-4 Polyamino sugar condensate Potassium lactate Propylene glycol Propyltrimonium hydrolyzed collagen Propyltrimonium hydrolyzed soy protein Propyltrimonium hydrolyzed wheat protein Quaternium-22 Rice (Oryza sativa) germ oil Sea Salts (Maris sal) Shea butter (Butyrospermum parkii) Silk powder Sodium behenoyl lactylate Sodium caproyl lactylate Sodium cocoyl lactylate Sodium hyaluronate Sodium isostearoyl lactylate Sodium lactate, S. lauroyl lactylate, S. PCA Sodium polyglutamate Sodium stearyl lactylate Sorbitan laurate Sorbitan sesquiossearate Sorbitol Sphingolipids TEA-PCA Urea</p> <p>Hydrotrope Ammonium cumenesulfonate Ammonium xylenesulfonate Cetamine oxide Cocamidopropylamine oxide Lauramine oxide Potassium toluenesulfonate PPG-2-isodeceth-4, -6, -9, -12 Sodium cumene sulfonate Sodium laureth-13-carboxylate Sodium toluene sulfonate Sodium xylene sulfonate Trideceth-19-carboxylic acid</p> <p>Intermediate Caprylic acid Deceth-3 Diethyl succinate Dimethylaminopropylamine DM hydantoin Dodecylbenzene sulfonic acid Ethylene dichloride 4-Fluoro 3-nitro aniline Lauramine Methyl benzoate, M. cococate Methyl isostearate, M. laurate Methyl myristate, M. palmitate Oleic acid Ricinoleic acid Tall oil acid Tallow acid</p> <p>Lathering agent Ammonium cocoyl sarcosinate Ammonium C12-15 alkyl sulfate Ammonium lauroyl sarcosinate Cocamide MEA, ethoxylate Cocamidopropyl dimethylaminohydroxypropyl hydrolyzed collagen Lauroyl sarcosine Myristoyl sarcosine Sodium cocoyl sarcosinate Sodium lauroyl sarcosinate Sodium methyl cocoyl taurate Sodium myristoyl sarcosinate TEA-cocoyl sarcosinate TEA-lauroyl sarcosinate</p> <p>Lubricant Aluminum salt octenyl succinate Amodimethicone</p>
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Functions

Boron nitride
Calcium aluminum borosilicate
Calcium stearate
Caprylic/capric triglyceride
Coceth-7 carboxylic acid
Coconut (Cocos nucifera) oil
Cyclomethicone
Diisodecyl adipate
Diisostearyl fumarate
Dimethicone copolyol
Glyceryl isostearate, G. oleate
Glyceryl polymethacrylate
Gold of Pleasure oil
Hyaluronic acid
Hydrogenated coconut oil
Hydrogenated cottonseed oil
Hydrogenated palm oil
Hydrogenated soybean/cottonseed oil
Hydrogenated soybean oil
Hydrogenated vegetable oil
Hydrolyzed oat flour
Hydroxypropyl guar
Isodecyl stearate
Isopropyl lanolate
Isostearyl diglyceryl succinate
Jojoba esters
Lanolin oil
Laureth-3 phosphate
Magnesium myristate, M. stearate
Mango (Mangifera indica) oil
Mineral oil (Paraffinum liquidum)
Mink oil
Monostearyl citrate
Neatsfoot oil
Oleostearine
Partially hydrogenated soybean oil
PEG-2 stearate
PEG-4 dilaurate
PEG-5M
PEG-9M
PEG-23M
PEG-27 lanolin
PEG-30 lanolin
PEG-40 lanolin, P. stearate
PEG-45M
PEG-90M
PEG-160M
PEG/PPG-17/6 copolymer
Pentaerythrityl tetrapelargonate
Petrolatum
Phenethyl dimethicone
Phenyl methicone
Polyacrylamidomethylpropane sulfonic acid
Polybutene
Polydimethicone copolyol
Polyglycerol ester of mixed vegetable fatty acids
Polymethylsilsequioxane
Potassium laurate, P. myristate
Potassium tallowate
PPG-2 myristyl ether propionate
PPG-3 myristyl ether
PPG-9-buteth-12
PPG-11 stearyl ether
PPG-12-buteth-16
PPG-12-PEG-50 lanolin
PPG-14 butyl ether
PPG-20 ceryl ether
PPG-20-buteth-30
PPG-24-buteth-27
PPG-28-buteth-35
PPG-36 oleate
PPG-40 butyl ether
Quaternium-79 hydrolyzed keratin
Quaternium-79 hydrolyzed silk
Rice (Oryza sativa) starch
Shea butter (Butyrospermum parkii) extract
Shorea stenoptera butter
Silica
Stearamide MEA, S. MEA-stearate
Stearoxytrimethylsilane

Stearyl dimethicone
Trisostearyl citrate
Triolein
Trisodium HEDTA
Triundecanoin
Zinc laurate, Z. stearate

Miscellaneous

Adhesion promoter—Glycerin/diethylene glycol/adipate crosspolymer
Analgesic—Glycol salicylate
Anesthetic—Benzocaine
Anti-elastic—Hydrolyzed Ulva lactuca extract
Anti-itching—Sodium shale oil sulfonate
Antiacid—Magnesium hydroxide, Magnesium silicate, Simethicone
Antifoam—Dimethicone silylate, Simethicone
Antilipasic—Laminaria saccharina extract
Antipruritic—Coal tar
Antispasmodic—Garlic (Allium sativum) extract
Antiwrinkle—Chinese hibiscus (Hibiscus rosa-sinensis) extract
Barrier—Glycerin/diethylene glycol/adipate crosspolymer
Cell regeneration—Glycoproteins, Hydrolyzed Ulva lactuca extract
Co-emulsifier—Cholesteryl/beheryl/octyldodecyl lauroyl glutamate, Isododecane
Colloid—Gelatin
Cooling agent—Menthyl PCA, Menthone glycerin acetal
Detoxifier—Clover (Trifolium pratense) extract
Dye stabilizer—Uric acid
Filler—Mica
Fragrance stabilizer—2,2',4,4'-Tetrahydroxybenzophenone
Free radical scavenger—Melanin
IR filter—Corallina officinalis

Lanolin substitute—PEG-80 jojoba acid/alcohol
Lipolytic—Gelidium carilagineum
Oxidant—Barium peroxide, Hydrogen peroxide, Urea peroxide
Oxygen carrier—Perfluorodecalin
Peroxide stabilizer—Phenacetin, Sodium stannate
Scalp stimulant—Birch (Betula alba) leaf extract
Sebostatic—Laminaria saccharina extract
Shine enhancer—Hydrolyzed wheat protein hydroxypropyl polysiloxane
Skin barrier lipid—Ceramide 3, N(27-Stearoyloxy-heptacosanoyl) phytosphingosine
Skin clarifier—Oat (Avena sativa) bran extract
Skin purifier—Birch (Betula alba) leaf extract
Substantivity—Dimethicone copolyol bishydroxyethylamine, Dimethicone hydroxypropyl trimonium chloride, Trimethylsilylamodimethicone
Sunless tanning—Acetyl tyrosine, Eclipta alba extract in white emulsion
Tonic—Kiwi (Actinidia chinensis) fruit extract, Matricaria (Chamomilla recutita) extract, Orange (Citrus aurantium dulcis) peel extract
Viscosity stabilizer—Diisodecyl adipate
Spreading agent—Stearyl heptanoate
Wound healing—Comfrey (Symphytum officinale) leaf extract
Waterproofing agent—PVP/eicosene copolymer, PVP/hexadecene copolymer, Triconanil PVP

Moisture barrier

Acrylates/octylarylamide copolymer
Beta-glucan
C16-18 alkyl methicone
Cholesterol
Glycolipids
Isoeicosane

BERNEL

CHEMICAL COMPANY

Up to date, innovative technology for the cosmetic industry has been the driving force behind Bernel Chemical Company since its founding in 1982. Combining over 60 years of cosmetic expertise and marketing knowledge, we have introduced more than 20 raw materials for use by the cosmetic chemist.

Our product is innovation. Finding unique materials, such as MARRIX SF and CUPL[®] PIC, that contribute to the growth of our customers has established Bernel products worldwide.

BERNEL

CHEMICAL COMPANY

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Functions

Isohexadecane	Embolica officinalis extract	Methylsilanol elastinate, M. mannuronate
Lanosterol	Ethyl minkate	Milk amino acids
Octyl pelargonate, O. stearate	Eugenia jambolana extract	Mineral oil (Paraffinum liquidum)
Polyisobutene	Evening primrose (Oenothera biennis) extract, oil	Molybdenum aspartate
Polyisobutene/isohexapentacontahexane	Galla sinensis extract	Mouriri spiranga extract
Polyisobutene/isooctahexacontane	Ganoderma lucidum oil	Natto gum
Silica silylate	Ginseng (Panax ginseng) extract	Nelumbium speciosum extract
Trihydroxypalmitamidohydroxy propyl myristyl ether	Gleditsia sinensis extract	Neopenyl glycol dicaprate
Trimethylsiloxysilicate	Glycereth-12	Oat (Avena sativa) protein
Moisturizer	Glyceryl alginate, G. collagenate	Octyl hydroxystearate
Acetamidopropyl trimonium chloride	Glyceryl polymethacrylate	Ophiopogon japonicus extract
Adenosine triphosphate	Glycolic acid	Orange (Citrus aurantium dulcis) peel wax
Aesculus chinensis extract	Glycolipids	Palmetto extract
Algae (Ascophyllum nodosum) extract	Glycosaminoglycans	Panethine
Algae extract	Glycosphingolipids	Panthenyl ethyl ether
Aloe barbadensis, A. b. extract	Gnetum amazonicum extract	Paraffin
Ammonium lactate	Grape (Vitis vinifera) seed oil	Partially hydrogenated soybean oil
Amniotic fluid	Hazel (Corylus avellana) nut oil	Peanut (Arachis hypogaea) oil
Apple (Pyrus malus) extract	Honey extract	Pecan (Carya illinoensis) oil
Apricot (Prunus armeniaca) kernel oil	Hyaluronic acid	PEG-4, -6, -8, -12
Arginine PCA	Hybrid safflower (Carthamus tinctorius) oil	PEG-70 mango glycerides
Atelocollagen	Hydrogenated castor oil	PEG-75 shea butter glycerides
Artemisia apiacea extract	Hydrogenated coconut oil	PEG-75 shorea butter glycerides
Astrocaryum murumuru extract	Hydrogenated cottonseed oil	PEG-100 stearate
Avocado (Persea gratissima) extract, oil	Hydrogenated lecithin	Pentaerythrityl isostearate/caprate/caprylate/adipate
Avocado (Persea gratissima) unsaponifiables	Hydrogenated palm oil	Pentaerythrityl stearate/caprate/caprylate/adipate
Babassu (Orbignya oleifera) oil	Hydrogenated polyisobutene	Pentylene glycol
Bactris gasipaes extract	Hydrogenated soybean oil	Perfluoropolymethylisopropyl ether
Benincasa hispida extract	Hydrogenated vegetable oil	Petrolatum
Betaglucan	Hydrolyzed carbolipoprotein	Petroleum wax
Betaine	Hydrolyzed collagen	Pfaffia spp. extract
Borage (Borago officinalis) seed oil	Hydrolyzed elastin	Pistachio (Pistacia vera) nut oil
Brazil nut (Bertholletia excelsa) extract, oil	Hydrolyzed fibronectin	Placental protein
C10-30 cholesterol/lanosterol esters	Hydrolyzed glycosaminoglycans	Plankton extract
Calcium pantothenate	Hydrolyzed keratin	Polyamino sugar condensate
Calcium protein complex	Hydrolyzed milk protein	Polybutene
Caprylic/capric triglyceride	Hydrolyzed oats	Polyunsaturated fatty acids
Caprylic/capric/lauric triglyceride	Hydrolyzed pea protein	Potassium DNA, P. lactate, P. PCA
Caprylic/capric/linoleic triglyceride	Hydrolyzed placental protein	PPG-8/SMDI copolymer
Caprylic/capric/oleic triglycerides	Hydrolyzed rice protein	PPG-20 methyl glucose ether distearate
Cashew (Anacardium occidentale) nut oil	Hydrolyzed transgenic collagen	Propylene glycol dicaprylate/dicaprate
Celastrus paniculata extract	Hydrolyzed serum protein	Propylene glycol dioctanoate
Ceramide 33 (liquid soy extract)	Hydrolyzed silk	Pumpkin (Cucurbita pepo) seed oil
Chia (Salvia hispanica) oil	Hydrolyzed sweet almond protein	Quinoa (Chenopodium quinoa) extract
Chinese hibiscus (Hibiscus rosa-sinensis) extract	Hydrolyzed wheat protein	Rapeseed (Brassica campestris) oil
Chitin	Hydroxyethyl chitosan	Rehmannia chinensis extract
Chitosan, C. PCA	Inositol	Rice (Oryza sativa) bran oil
Cholesteric esters	Isodecyl salicylate	Rose Water
Cholesterol	Isostearyl hydrolyzed animal protein	Royal jelly extract
Cholesteryl/behene/octyldodecyl lauroyl glutamate	Jajoba (Buxus chinensis) oil	Saccharide isomerase
Cocodimonium hydroxypropyl hydrolyzed collagen	Jajoba esters	Saccharomyces lysate extract
Cocodimonium hydroxypropyl hydrolyzed silk	Keratin amino acids	Saccharomyces/soy protein ferment
Cocodimonium hydroxypropyl hydrolyzed wheat protein	Kiwi (Actinidia chinensis) fruit extract	Safflower (Carthamus tinctorius) oil
Cocodimonium hydroxypropyl silk amino acids	Kola (Cola acuminata) extract	Selenium aspartate, S. protein complex
Collagen	Kukui (Aleurites moluccana) nut oil	Sericin
Collagen amino acids, C. phthalate	Lactamide DGA, L. MEA	Serum albumin
Copper aspartate, C. protein complex	Lactic acid	Sesame (Sesamum indicum) oil
Corn (Zea mays) oil	Lactobacillus/whay ferment	Shea butter (Butyrospermum parkii)
Cottonseed (Gossypium) oil	Lactococcus hydrolysate	Shea butter (Butyrospermum parkii) extract
Crataegus cuneata extract	Lactoyl methylsilanol elastinate	Shorea stenoptera butter
Cucumber (Cucumis sativus) extract	Lanolin alcohol	Silk amino acids
Desamido collagen	Lauryl PCA	Sodium carboxymethyl beta-glucan
Dicaprylyl maleate	Lecithin	Sodium chondroitin sulfate
Diisocetyl dodecanedioate	Lesquerella fendleri oil	Sodium DNA, S. hyaluronate
Diisostearyl adipate	Liposomes	Sodium lactate, S. PCA
Dimethyl hyaluronate	Lysine PCA	Soluble collagen
Dimethylsilanol hyaluronate	Macadamia ternifolia nut oil	Soluble transgenic elastin
Diocetyl dodecyl dimer dilinoleate	Magnesium aspartate	Soybean (Glycine soja) oil
Diocetyl dodecyl dodecanedioate	Maltitol	Spherical cellulose acetate
Dipentaerythritol fatty acid ester	Manganese aspartate	Spondias amara extract
Dog rose (Rosa canina) hips extract	Mango (Mangifera indica) oil	Squalene
Dog rose (Rosa canina) seed extract	Mannan	Stomach extract
Echitea glauca extract	Marine polyaminosaccharide	Sunflower (Helianthus annuus) seed oil
Elastin amino acids	Mauritella armata extract	Superoxide dismutase
	Maximilliana regia extract	Tissue extract
	Meadowfoam (Limnanthes alba) seed oil	Tocopheryl acetate, T. linoleate
	Melaleuca hypericifolia extract	Tomato (Solanum lycopersicum) extract

Functions

Tormentil (*Potentilla erecta*) extract
 Trehalose
 Triundecanoin
 Vegetable oil
 Walnut (*Juglans regia*) oil
 Watercress (*Nasturtium officinale*) extract
 Wheat (*Triticum vulgare*) germ extract, germ oil
 Yarrow (*Achillea millefolium*) extract
 Wheat amino acids
 Yeast (*Saccharomyces cerevisiae*) extract (Faex)
 Yogurt filtrate
 Zinc aspartate
 Ziziphus jujuba extract

Naturilizer

2-Aminobutanol
 Aminoethyl propanediol
 Aminomethyl propanediol
 Aminomethyl propanol
 Ammonium carbonate
 Calcium hydroxide
 Diethanolamine
 Ethanolamine
 Glucamine
 Isopropanolamine
 Isopropylamine
 2-Methyl-4-hydroxypyrrolidine
 Morpholine
 Sodium bromate
 Succinic acid
 Tetrahydroxypropyl ethylenediamine
 Triethanolamine
 Tromethamine

Oil absorbent

Hydrated silica
 Polymethyl methacrylate
 Silicon dioxide hydrate
 Walnut (*Juglans regia*) shell powder

Ointment base

Borage (*Borago officinalis*) seed oil
 Caprylic/capric/stearic triglyceride
 Glyceryl cocoate
 Hydrogenated coco-glycerides
 Lanolin
 Mink oil
 Oleostearine
 Tallow

Opacifier

Barium sulfate
 C12-16 alcohols
 Cetearyl octanoate
 Cetyl myristate, C. palmitate
 Cocamidopropyl lauryl ether
 Glyceryl distearate
 Glyceryl hydroxystearate
 Glyceryl myristate, G. stearate
 Glycol distearate, G. stearate
 Magnesium myristate
 PEG-2 distearate, P. stearate
 PEG-2 stearate SE
 PEG-3 distearate
 Propylene glycol myristate, P. g. stearate
 Stearamide
 Stearamide DIBA-stearate
 Stearamide MEA
 Stearamide MEA-stearate
 Stearamidopropyl dimethylamine lactate

Stearyl stearate
 Styrene homopolymer
 Styrene/acrylates copolymer
 Styrene/PVP copolymer
 Triisostearin PEG-6 esters

Plasticizer

Acetyl tributyl citrate
 Acetyl triethyl citrate
 AMP-isostearoyl hydrolyzed wheat protein
 AMPD-isostearoyl hydrolyzed collagen
 Cyclohexane dimethanol dibenzoate
 Dibutyl phthalate
 Diethyl phthalate
 Diethylene glycol dibenzoate
 Diisopropyl sebacate
 Dimethicone copolyol
 Dimethyl phthalate
 Dipropylene glycol dibenzoate
 Ethyl ester of hydrolyzed keratin
 Glycerol tnbenzoate
 Glycol
 Hydrolyzed serum protein
 Isocetyl salicylate
 Isodecyl benzoate
 Isoeicosane
 Isopropyl lanolate
 Isostearoyl hydrolyzed collagen
 Lauroyl hydrolyzed collagen
 Marine collagen
 Monostearyl citrate
 Neopentyl glycol dibenzoate
 Octyl benzoate, O. laurate
 PEG-60 shea butter glycerides
 Pentaerythrityl tetrabenzoate
 Polyoxyethylene glycol dibenzoate
 Polypropylene glycol dibenzoate
 PPG-12-PEG-50 lanolin
 PPG-20 cetyl ether
 PPG-20 lanolin alcohol ether
 Propylene glycol dibenzoate
 Propylene glycol myristyl ether acetate
 Rice (*Oryza sativa*) bran wax
 Serum protein
 Tosylamide/epoxy resin
 Triacetin
 Tributyl citrate
 Triethyl citrate
 Trimethyl pentanediol dibenzoate
 Trimethylethanetribenzoate

Polish

Acrylates copolymer
 Aluminum silicate
 Neatsfoot oil
 Tallow

Polymer

Acrylamide sodium acrylate copolymer
 Acrylates-VA crosspolymer
 Acrylates/acrylamide copolymer
 Acrylates/hydroxyesters acrylates copolymer
 Acrylates/octylacrylamide copolymer
 Acrylates/steareth-20 methacrylate copolymer
 Adipic acid-epoxypropyl diethylenetriamine copolymer
 Adipic acid/dimethylaminohydroxypropyl diethylene triamine copolymer
 Ammonium acrylates copolymer

Ammonium acrylates/acrylonitrogens copolymer
 AMP-acrylates copolymer
 AMP-isostearoyl hydrolyzed collagen
 Butylester of PVM-MA copolymer
 Calcium carrageenan
 Carboxylated vinylacetate terpolymer
 Ceteareth-2 phosphate
 Ceteareth-5 phosphate
 Ceteareth-10 phosphate
 Ceteareth-29, -34
 Coco-glucoside
 Cocodimonium hydroxypropyloxyethyl cellulose
 C12-13 pareth-4, -9, -23
 DEA-ceteareth-2-phosphate
 DEA-oleth-5-phosphate
 DEA-oleth-20-phosphate
 Diglycol/CHDM/isophthalates/SIP copolymer
 Diisopropyl dimer dilinoleate
 Diisostearoyl trimethylolpropane siloxy silicate
 Diisostearyl dimer dilinoleate
 Dilinoleic acid
 Dodecanedioic acid/cetearyl alcohol/glycol copolymer
 Eclipta alba extract
 Ethyl ester of PVM/MA copolymer
 Ethylene/acrylic acid copolymer
 Ethylene/VA copolymer
 Glyceth-26 phosphate
 Hyaluronic acid
 Hydrolyzed RNA
 Hydrolyzed wheat protein polysiloxane polymer
 Hydroxypropyltrimonium hydrolyzed collagen
 Hydroxypropyltrimonium hydrolyzed wheat protein
 Laneth-10
 Lauryldimonium hydroxypropyl hydrolyzed soy protein
 Methacryloyl ethyl betaine/acrylates copolymer
 Octylacrylamide/acrylates/butylaminoethyl methacrylate copolymer
 Oleth-2 phosphate
 Oleth-5 phosphate
 PEG-3 lanolate
 PEG-4 stearate
 PEG-5M
 PEG-7 glyceryl cocoate
 PEG-8 glyceryl laurate
 PEG-8/SMDI copolymer
 PEG-9 castor oil
 PEG-9M
 PEG-11 babassu glycerides
 PEG-12 palm kernel glycerides
 PEG-12 stearate
 PEG-14 avocado glycerides
 PEG-15 glyceryl laurate
 PEG-20 corn glycerides
 PEG-20 evening primrose glycerides
 PEG-20 glyceryl oleate
 PEG-23 oleate
 PEG-23M
 PEG-29 castor oil
 PEG-42 babassu glycerides
 PEG-45 safflower glycerides
 PEG-45M
 PEG-60 evening primrose glycerides
 PEG-60 hydrogenated castor oil
 PEG-75 castor oil
 PEG-90M
 PEG-120 distearate

3 BETTER IDEAS.

CARBOPOL
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 New, easiest to
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 POLYMER
 For surfactant-based
 products

PEMULEN
 POLYMERIC EMULSIFIERS
 Eliminates surfactant-based
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Functions

PEG-150 lanolin
 PEG-160M
 PG-hydroxycellulose lauryldimonium chloride
 PG-hydroxyethylcellulose cocodimonium chloride
 PG-hydroxyethylcellulose stearyldimonium chloride
 Polyethylene, ionomer
 Polyethylene, micronized
 Polyethylene, oxidized
 Polyglyceryl-2 polyhydroxystearate
 Polymethacrylamidopropyltrimonium chloride
 Polyquaternium-6, -7, -10, -11, -22, -39
 Polysilicone-8
 Potassium alginate
 Potassium lauroyl collagen amino acids
 Potassium lauroyl hydrolyzed soy protein
 Potassium lauroyl wheat amino acids
 PPG-8/SMDI copolymer
 PPG-12/SMDI copolymer
 PPG-51/SMDI copolymer
 PVM/MA decadiene crosspolymer
 PVP/dimethylaminoethylmethacrylate copolymer
 PVP/VA copolymer
 Sodium cocoyl hydrolyzed wheat protein
 Steardimonium hydroxypropyl hydrolyzed wheat protein
 Steareth-2 phosphate
 TEA-acrylates/acrylonitrogens copolymer
 Tosylamide/epoxy resin
 Tosylamide/formaldehyde resin
 Trideceth-5, -6, -7, -8
 VA/butyl maleate/isobornyl acrylate copolymer
 VA/crotonates/vinyl neodecanoate copolymer
 Vinyl caprolactam/PVP/
 dimethylaminoethylmethacrylate copolymer
 Wheat (Triticum vulgare) protein
 Xanthan gum

Powder
 Acrylates copolymer, spherical powder
 Attapulgate
 Boron nitride
 Calcium aluminum borosilicate
 Calcium carbonate
 Cellulose triacetate
 Corn (Zea mays) cob powder, starch
 Hydrogenated jojoba wax
 Magnesium carbonate, M. myristate
 Magnesium stearate
 Mica
 Microcrystalline cellulose
 Nylon-6
 Nylon powder
 Oat (Avena sativa) starch
 Polyamide 12
 Polyethylene
 Polymethyl methacrylate
 Polymethylsilsesquioxane
 PTFE
 Silica
 Silk powder
 Spherical cellulose acetate
 Talc
 Tapioca dextrin
 Zinc laurate

Powder, absorbent
 Aluminum starch octenylsuccinate
 Clays (white, yellow, red, green, pink)
 Sorbitol
 Tapioca

Preservative
 Alcohol
 Ascorbic acid
 Ascorbyl palmitate

Benzalkonium chloride
 Benzenethonium chloride
 Benzoic acid
 Benzyl alcohol
 Benzylparaben
 5-Bromo-5-nitro-1,3-dioxane
 2-Bromo-2-nitropropane-1,3-diol
 Butylparaben
 Calcium propionate
 Cetrimonium bromide
 Cetyl pyridinium chloride
 Chloroxylenol
 Chlorphenesin
 o-Cymen-5-ol
 Diazolidinyl urea
 Dichlorobenzyl alcohol
 Dichlorophene
 Diiodomethyltolylsulfone
 Dimethyl hydroxymethyl pyrazole
 Dimethyl oxazolidine
 Disodium EDTA
 DMDM hydantoin
 EDTA
 Erythorbic acid
 7-Ethylbicyclooxazolidine
 Ethylparaben
 Fomistopsis officinalis oil
 Formaldehyde
 Glutaral
 Glyceryl laurate
 HEDTA
 Hexamine diisethionate
 Hexetidine
 Imidazolidinyl urea
 Isobutylparaben
 Isopropyl sorbate
 Isopropylparaben
 MDM hydantoin
 Methenammmonium chloride
 Methyl paraben sodium
 Methylchloroisothiazolinone
 Methylidibromo glutaronitrile
 Methylisothiazolinone
 Methylparaben
 Mushrooms (Cordyceps sabolifera) extract
 Myrrimonium bromide
 Pentasodium penitete
 Penitetic acid
 Phenethyl alcohol
 Phenol
 Phenyl mercuric acetate
 o-Phenylphenol
 Polyaminopropyl biguanide
 Polymethoxy bicyclic oxazolidine
 Potassium sorbate
 Propylparaben
 Quaternium-15
 Salicylic acid
 Sodium benzoate, S. bisulfate
 Sodium butylparaben, S. dehydroacetate
 Sodium erythorbate, S. ethyl paraben
 Sodium hydroxymethylglycinate
 Sodium metabisulfite, S. methylparaben
 Sodium o-phenylphenate
 Sodium propionate, S. propylparaben
 Sodium pyrrithione, S. salicylate
 Sodium sulfite
 Sorbic acid
 Tetrasodium EDTA
 Thimerosal
 Thymol
 Tris (hydroxymethyl) nitromethane
 Trisodium EDTA, T. HEDTA
 Usmic acid
 Zinc PCA

Propellant
 Butane
 Dimethyl ether
 Hydrofluorocarbon 152a

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Functions

Isobutane
Propane

Protein

Albumen
Atelocollagen
Bletia hyacinthina extract
Chrysanthemum monifolium extract
Cocodimonium hydroxypropyl hydrolyzed collagen
Cocodimonium hydroxypropyl hydrolyzed keratin
Cocodimonium hydroxypropyl hydrolyzed soy protein
Cocodimonium hydroxypropyl hydrolyzed wheat protein
Cocoyl hydrolyzed collagen
Collagen, C. phthalate
Collagen amino-polysiloxane hydrolyzate
Deoxyribonucleic acid
Desamido collagen
Elastin amino acids
Embryo extract
Ethyl ester of hydrolyzed animal protein
Fibrinectin
Gelatin
Human placental protein
Hydrolyzed collagen
Hydrolyzed extensin
Hydrolyzed fish protein
Hydrolyzed hemoglobin
Hydrolyzed keratin
Hydrolyzed lactalbumin
Hydrolyzed milk protein
Hydrolyzed soy flour
Hydrolyzed sweet almond protein
Hydroxypropyltrimonium hydrolyzed collagen
Isostearyl hydrolyzed collagen
Keratin
Lactoferrin
Lactoglobulin
Laurylidimonium hydroxypropyl hydrolyzed collagen
Marine collagen
Methylsilanol elastinate
Potassium abietoyl hydrolyzed collagen
Potassium cocoyl hydrolyzed collagen
Potassium myristoyl hydrolyzed collagen
Potassium oleoyl hydrolyzed collagen
Potassium undecylenoyl hydrolyzed collagen
Propyltrimonium hydrolyzed collagen
Propyltrimonium hydrolyzed soy protein
Propyltrimonium hydrolyzed wheat protein
Protein hydrolysates
Quaternium-79 hydrolyzed keratin
Quaternium-79 hydrolyzed silk
Rice peptide
RNA
Serum albumin, S. protein
Silk powder

Sodium caseinate
Sodium cocoyl hydrolyzed collagen
Sodium cocoyl hydrolyzed soy protein
Sodium myristoyl hydrolyzed collagen
Sodium oleoyl hydrolyzed collagen
Sodium stearoyl hydrolyzed collagen
Sodium undecylenoyl hydrolyzed collagen
Sodium/TEA-lauroyl hydrolyzed collagen
Sodium/TEA-lauroyl hydrolyzed keratin
Soluble collagen
Soluble keratin
Soluble wheat protein
Soy (Glycine soja) protein
Sleardimonium hydroxypropyl hydrolyzed collagen
Sleardimonium hydroxyethyl hydrolyzed collagen
TEA-cocoyl hydrolyzed collagen
TEA-cocoyl hydrolyzed soy protein
TEA-lauroyl collagen amino acids
TEA-lauroyl keratin amino acids
Trachea hydrolysate
Triethonium hydrolyzed collagen ethosulfate
Wheat (Triticum vulgare) germ extract, protein
Wheat amino acids
Wheat peptide
Wheat protein

Protein, hydrolyzed

Ethyl ester of hydrolyzed silk
Hydrolyzed casein
Hydrolyzed elastin
Hydrolyzed mushroom (Tricholoma matsutake) extract
Hydrolyzed pea protein
Hydrolyzed rice protein
Hydrolyzed serum protein
Hydrolyzed silk
Hydrolyzed soy protein
Hydrolyzed vegetable protein
Hydrolyzed wheat protein
Hydroxypropyltrimonium hydrolyzed casein
Hydroxypropyltrimonium hydrolyzed silk
Hydroxypropyltrimonium hydrolyzed soy protein
Hydroxypropyltrimonium hydrolyzed wheat protein

Reducing agent

Dimyristyl thiodipropionate
Hydrolyzed zein, iodized
Hydrolyzed zein, sulfurized
Zinc formaldehyde sulfoxylate

Refatting agent

Caprylic/capric triglyceride PEG-4 esters
Cocamide MIPA
Diisostearyl dimer dilinoleate
Hydrogenated palm kernel glycerides
Isostearyl erucate, I. isostearate
Lecithin

Liposomes
Magnesium sulfate hepta-hydrate
Octyldodecyl behenate, O. myristate
bis-Octyldodecyl stearoyl dimer dilinoleate
Octyldodecyl stearoyl stearate
Octyl hydroxystearate
PEG-3 stearate
PEG-4 oleamide
PEG-6 capric/caprylic glycerides
PEG-7 glyceryl cocoate
PEG-16
Propylene glycol dipelargonate

Resin

Acrylates/hydroxyesters acrylates copolymer
Ethylene vinyl acetate
Glyceryl abietate
Methacryloyl ethyl betaine/acrylates copolymer
4-Methyl benzenesulfonamide
Polypropylene
Polyquaternium-16, -14
Sucrose benzoate

Sequestrant

Calcium acetate, C. phosphate, C. sulfate
Encapsulation and entrapment systems
Pentasodium triphosphate
Phosphoric acid
Potassium phosphate, P. sodium tartrate
Silicon dioxide hydrate
Sodium citrate, S. gluconate
Sorbitol
Tartaric acid
Tripotassium EDTA
Trisodium NTA

Silicone

Amino bispropyl dimethicone
Ammonium dimethicone copolyol sulfate
Amodimethicone
Behenoxy dimethicone
C16-18 alkyl methicone
Cetyl dimethicone copolyol
CyclomethiconeDiisostearyl trimethylolpropane siloxy silicate
Diisododecyl adipate
Diisostearyl trimethylolpropane siloxy silicate
Dimethicone
Dimethicone copolyol
Dimethicone copolyol almondate
Dimethicone copolyol isostearate
Dimethicone copolyol olive, D. c. phthalate
Dimethicone copolyolamine
Dimethiconol fluoroalcohol dilinoleic acid
Dimethiconol hydroxystearate, D. stearate
Diphenyl dimethicone
Disodium-PG-propyldimethicone thiosulfate
Isopropyl hydroxybutyramide dimethicone copolyol
Methicone

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Proteins
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Functions

Octamethyl cyclotetrasiloxane
Phenyl methicone, P. trimethicone
Polyether Trisiloxane
Polymethylsilsesquioxane
Polysilicone-8
Quaternium-80
Silicone quaternium-1, -8
Sodium-PG-propyl thiosulfate dimethicone
Stearoxymethicone/dimethicone copolymer
Trimethylsilylamodimethicone

Skin calming agent

Cornflower (*Centaurea cyanus*) extract
Fennel (*Foeniculum vulgare*) extract
Fenugreek extract
Linden (*Tilia cordata*) extract
Valerian (*Valeriana officinalis*) extract

Skin cleanser

Dog rose (*Rosa canina*) hips extract
Papaya (*Carica papaya*) extract
Peach (*Prunus persica*) extract
Rose (*Rosa multiflora*) extract
Willow (*Salix alba*) extract

Skin conditioner

Artemisia apiacea extract
Astrocaryum (tucuma) extract
Bactris gasipaes extract
Biotin
Bishydroxyethyl biscetyl malonamide
Bletia hyacinthina extract
Borage (*Borago officinalis*) seed oil
Borageamidopropyl phosphatidyl PG-dimonium chloride
Carboxysteine
Catalpa kaempfera extract
Coco phosphatidyl PG-dimonium chloride
Cocodimonium hydroxypropyl hydrolyzed keratin
Collagen amino acids
Cyclomethicone
Dimethicone, D. copolyl acetate
Embllica officinalis extract
Equisetum arvense extract
Ethyl ester of hydrolyzed animal protein
Evening primrose (*Oenothera biennis*) oil
Fomes fometarius extract
Fomistopsis officinalis oil
Gelatin
Ginseng hydroxypropyltrimonium chloride
butylene glycol
Glycolipids
Glycosphingolipids
Gnerum amazonicum extract
Honey (Mel)
Hydrolyzed carbolipoprotein
Hydrolyzed elastin
Hydrolyzed pea protein
Hydrolyzed rice protein
Hydrolyzed serum protein
Hydrolyzed silk
Hydrolyzed soy protein
Hydrolyzed vegetable protein
Hydrolyzed wheat protein
Inga edulis extract
Kiwi (*Actinidia chinensis*) fruit extract
Laminaria japonica extract
Lecithin
Marsilea minuta extract
Nettle (*Urtica dioica*) extract
Palmitamidodecanediol
Pearls (*Margarita margarita*)
PEG-42 Ebiniko ceramides extract
Phenyl trimethicone
Phytantriol
Polygonum multiflorum extract
Polyquaternium-1 -22 -39
Potassium cocoyl hydrolyzed collagen

Potassium cocoyl hydrolyzed collagen
Retinyl palmitate polypeptide
Salvia miltiorrhiza extract
Silt
Sodium cocoyl hydrolyzed collagen
Soluble transgenic elastin
Sicantrimonium hydroxyethyl hydrolyzed collagen
Stearyl methicone

Skin healing

Calendula officinalis extract
Glycoproteins
Hydrocotyl (*Centella asiatica*) extract
Oat (*Avena sativa*) extract
Sandalwood (*Santalum album*) extract
Spearmin (*Mentha viridis*) extract

Skin lightening/whitening agent

Ascorbic acid polypeptide
Bearberry (*Arctostaphylos uva-ursi*) extract
Hydroquinone-beta-D-glucopyranoside
Lemon (*Citrus medica limonum*) peel extract
Pearls (*Margarita margarita*)

Skin protectant

Acetylmethionyl methylsilanol elastinate
Allantoin, A. aluminum hydroxide
Aloe barbadensis, A. b. extract
Aluminum starch octenylsuccinate
Anise (*Pimpinella anisum*) extract
Amica montana extract
Artemisia apiacea extract
Ascorbyl methylsilanol pectinate
Astrocaryum tucuma extract
Bactris gasipaes extract
Betaglucan
Bishydroxyethyl biscetyl malonamide
Bletia hyacinthina extract
C 18-70 Isoparaffin
Calendula amurensis extract
Carboxymethyl chitin
Carcinia cambogia extract
Carrot (*Daucus carota*) extract
Carrot (*Daucus carota sativa*) oil
Catalpa kaempfera extract
Chenopodium album extract
Chitosan
Chrysanthemum morifolium extract
Collagen
Corn poppy (*Papaver rhoeas*) extract
Crataegus cuneata extract
Crataegus monogina extract
Cypress (*Cupressus sempervirens*) extract
Dimethicone
Dimethiconol fluoroalcohol dilinoleic acid
Dimethiconol hydroxystearate, D. stearate
Dimethylsilanol hyaluronate
Echitea glauca extract
Embryo extract
Entada phaseoloides extract
Equisetum arvense extract
Euphorium fortunei extract
Euterpe precatoria extract
Fenugreek extract
Fomistopsis officinalis oil, F. pinicola extract
Galla sinensis extract
Gentian (*Gentiana lutea*) extract
Gleditsia sinensis extract
Glycerol ricinoleate
Glycolipids
Hierochloe odorata extract
Hyaluronic acid
Hydrogenated lecithin
Hydrolyzed lupine protein
Hydrolyzed milk protein
Hydrolyzed mushroom (*Tricholoma matsutake*) extract
Indian cress (*Tropaeolum majus*) extract

Isodecyl salicylate
Jojoba (*Buxus chinensis*) oil
Lady's Thistle (*Silybum marianum*) extract
Laminaria japonica extract
Ligusticum jeholense extract
Liposomes
Magnolia spp. extract
Mango kernel oil
Marsilea minuta extract
Melaleuca hypericifolia extract
Melaleuca uncinata extract
Melaleuca wilsonii extract
Methylsilanol tri PEG-8 glyceryl cocoate
Oat (*Avena sativa*) meal
Oyster (*Osirea*) shell extract
Palmitamidodecanediol
Pearls (*Margarita margarita*)
Pentahydrosqualene
Perfluorodecalin
Perfluoropolymethylisopropyl ether
Petrolatum
PEG-8/SMDI copolymer
PEG-42 Ebiniko ceramides extract
Pfaffia spp. extract
Phospholipids
Plankton extract
Polygonum multiflorum extract
Pongamol
PPG-12/SMDI Copolymer
PPG-51/SMDI Copolymer
Propyltrimonium hydrolyzed collagen
Quinoa (*Chenopodium quinoa*) extract, oil
Salvia miltiorrhiza extract
Sambucus nigra extract
Shark liver oil
Shorea robusta extract
Sodium chondroitin sulfate
Soluble transgenic elastin
Sicantrimonium hydroxyethyl hydrolyzed collagen
Sterculia planifolia extract
Superoxide dismutase
Trachea hydrolysate
Wheat (*Triticum vulgare*) germ extract, protein
White nettle (*Lamium album*) extract
Withania somniferum extract
Xanthozylum bungeanum extract
Zinc oxide

Skin smoothing agent

Althea officinalis extract
Coltsfoot (*Tussilago farfara*) leaf extract
Comfrey (*Symphytum officinale*) leaf extract
Plantain (*Plantago major*) extract
Sericin

Skin softening

Clays (white, yellow, red, green, pink)
Cucumber (*Cucumis sativus*) extract
Kelp (*Macrocystis pyrifera*) extract
Peach (*Prunus persica*) extract
Phenethyl dimethicone

Skin soothing

Calendula officinalis extract
Cherry bark extract
Cucumber (*Cucumis sativus*) extract
Garlic (*Allium sativum*) extract
Hyssop (*Hyssopus officinalis*) extract
Jasmine (*Jasminum officinale*) extract
Kelp (*Macrocystis pyrifera*) extract
Mango kernel oil
Meadowsweet (*Spiraea ulmaria*) extract
Quince (*Pyrus cydonia*) seed extract
Slippery elm extract
Valerian (*Valeriana officinalis*) extract
Willow (*Salix alba*) extract
Witch hazel (*Hamamelis virginiana*) extract
Yarrow (*Achillea millefolium*) extract

Functions

Solubilizer

Acetyl monoethanolamine
Almond oil PEG-6 esters
2-Aminobutanol
Aminoethyl propanediol
Aminomethyl propanediol, A. propanol
Apricot kernel oil PEG-6 esters
Benzalkonium chloride
Butoxydiglycol
Butyl glucoside
Butylene glycol
Butyltoluol
Capric-caprylic mono-diglyceride
Capryl caprylylglucoside
Caprylic/capric triglyceride
Caprylic/capric/linoleic triglyceride
Caprylic/capric/oleic triglycerides
Caprylyl/capryl glucoside
Ceteareth-20
Ceteth-10
Cetyl PPG-2 isodeceth-7 carboxylate
Cholesterol
Cotton oil PEG-6 esters
Decaglycerol monodiolate
Diethanolamine
Dilaureth-10 phosphate
Dimethyl octynediol
Dioleth-8 phosphate
Glycereth-7 -26
Glyceryl caprylate, G. dilaurate
Glyceryl caprylate/caprate
Isoeicosane
Isopropanolamine
Isosteareth-20
Laneth-5, -15
Laureth-23
Methylated cyclodextrin
Myreth-3
Myreth-3-octanoate
Nonoxynol-10, -12, -14, -40, -50
Octoxynol-11, -40
Oleumphenolhydroxypropylsulfonate
Oleth-3, -5, -10, -15, -20, -25, -50
Oleth-20 phosphate
PEG-4, -6, -8, -12, -16, -20, -32, -40,
PEG-4 dilaurate
PEG-6 capric/caprylic glycerides
PEG-6 methyl ether
PEG-8 distearate
PEG-12 laurate

PEG-15 castor oil
PEG-18 stearate
PEG-20 glyceryl isostearate, P. g. laurate
PEG-20 glyceryl oleate, P. g. stearate
PEG-20 methyl glucose sesquisteate
PEG-20 sorbitan isostearate
PEG-20 sorbitan trisostearate
PEG-24 hydrogenated lanolin
PEG-25 castor oil
PEG-25 hydrogenated castor oil
PEG-30 castor oil
PEG-30 glyceryl cocoate
PEG-30 glyceryl isostearate
PEG-30 glyceryl laurate
PEG-30 glyceryl oleate
PEG-30 glyceryl stearate
PEG-33 castor oil
PEG-35 castor oil
PEG-36 castor oil
PEG-40 castor oil
PEG-40 glyceryl laurate, P. g. stearate
PEG-40 hydrogenated castor oil
PEG-40 hydrogenated castor oil PCA isostearate
PEG-40 sorbitan diisostearate
PEG-45 palm kernel glycerides
PEG-48 hydrogenated castor oil
PEG-50 castor oil
PEG-50 hydrogenated castor oil
PEG-60 almond glycerides
PEG-60 castor oil
PEG-60 corn glycerides
PEG-60 glyceryl isostearate, P. g. stearate
PEG-60 hydrogenated castor oil
PEG-60 lanolin
PEG-70 mango glycerides
PEG-75 lanolin
PEG-75 shea butter glycerides
PEG-75 shorea butter glycerides
PEG-80 hydrogenated castor oil
PEG-80 jojoba acid/alcohol
PEG-80 sorbitan laurate
PEG-100 castor oil
PEG-100 hydrogenated castor oil
PEG-120 jojoba acid/alcohol
PEG-200 trihydroxystearin
Poloxamer 407
Polyglyceryl-3 oleate
Polyglyceryl-6 dioleate
Polyglyceryl-10 decaoleate, P. tetraoleate
Polysorbate 20, 60, 80
PPG-2-isodeceth-4, -6, -9, -12

PPG-3 isosteareth-9
PPG-3 isoceteth-20 acetate
PPG-5-ceteth-10 phosphate
PPG-5-ceteth-20
PPG-6-decyltetradeceth-12, -20, -30
PPG-12-PEG-65 lanolin oil
PPG-15 stearyl ether
PPG-18 butyl ether
PPG-24 butyl ether
PPG-26-buteth-26
PPG-33 butyl ether
PPG-33-buteth-45
PPG-40-PEG-60 lanolin oil
PPG-50 ceryl ether
Propylene glycol dicaprylate, dicaprylate/
dicaprate
Ricinoleamide DEA
Ricinoleth-40
Sodium alpha olefin sulfonate
Sodium lauryl sulfate
Sodium methylphenylthalesulfonate
Triethanolamine
Triethanolin
Tromethamine

Solvent

Acetic acid
Acetone
Alcohol, A. denat.
Benzophenone
Butoxydiglycol
Butyl acetate
n-Butyl alcohol
Butyl myristate, B. stearate
Butylene glycol
C9-11 isoparaffin
C10-11 isoparaffin
C10-13 isoparaffin
Caprylic alcohol
Castor (Ricinus communis) oil
Cetearyl octanoate
Cetyl stearyl octanoate
Chlorobutanol
Decyl alcohol
Diethylene glycol
Diethylene glycol dibenzoate
Diethyl sebacate
Diisocetyl adipate
Diisopropyl adipate, D. sebacate
Dimethyl phthalate
Dipropylene glycol

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Functions

<p>Dipropylene glycol dibenzoate Ethoxydiglycol Ethyl acetate, E. lactate Ethyl myristate, E. oleate 2-Ethylhexyl isostearate Glycerin Glycofurof Heptane Hexyl alcohol Hexylene glycol Isobutyl stearate Isocetyl salicylate Isodecyl benzoate, I. isononanoate Isodecyl octanoate, I. oleate Isododecane Isoeicosane Isohexadecane Isopropyl alcohol, I. myristate Isostearyl stearoyl stearate Laureth-2 acetate Methoxydiglycol Methoxyisopropanol Methyl alcohol Methyl propanediol Methylene chloride MEK MIBK Morpholine Octyl benzoate, O. isononanoate Octyl laurate, O. palmitate Octyldodecyl lactate Olive oil PEG-6 esters Peanut oil PEG-6 esters Pentane Petroleum distillates PEG-6 methyl ether PEG-12 PEG-20 hydrogenated castor oil PEG-33 castor oil PEG-50 glyceryl cocoate Polyglyceryl-2 dioleate Polyglyceryl-3 diisostearate Polyoxyethylene glycol dibenzoate Polypropylene glycol dibenzoate PPG-2 myristyl ether propionate PPG-3 PPG-20 lanolin alcohol ether Propyl alcohol Propylene carbonate Propylene glycol Propylene glycol dibenzoate Propylene glycol methyl ether Propylene glycol myristate Pyridine Sesame (Sesamum indicum) oil Stearyl heptanoate Toluene Xylene</p> <p>SPF booster Borjoo sorbilis extract Isohexadecyl salicylate Styrene/acrylates copolymer Titanium dioxide Yeast (Saccharomyces cerevisiae) extract (Faex)</p> <p>Stabilizer Acrylates-VA crosspolymer Acrylates/ceteth-20 methacrylates copolymer Acrylates/steareth-20 methacrylates copolymer Acrylates/vinyl isodecanoate crosspolymer Alkyldimethylamine oxide C10 polycarbonyl polyglycol ester Calcium alginate Cocamidopropyl dimethylamine lactate Cocamine oxide Colloidal silica sols Cyclodextrin Disodium EDTA Gellan gum</p>	<p>Glyceryl diisostearate, G. stearate SE Glyceryl mono-di-tri-caprylate Hydrogenated coco-glycerides Hydrogenated C12-18 triglycerides Hydrogenated tallow glycerides Hydrolyzed oat flour Hydroxyoctacosanyl hydroxystearate Karaya (Sterculia urens) gum Laureth-3 Maltitol Methylated cyclodextrin Oleamide PEG-40 stearate PEG-40/dodecyl glycol copolymer Perfluoropolyethylisopropyl ether Polyethylene paste PPG-5 lanolin wax PPG-7-buteth-10 PPG-10 cetyl ether phosphate Propylene carbonate, P. glycol alginate PVM/MA decadiene crosspolymer Sodium acrylates/vinyl isodecanoate crosspolymer Sodium carbomer Sorbitan laurate Stearic hydrazide 2,2',4,4'-Tetrahydroxybenzophenone Tricaprin Tricaprylin Trilaurin Trimyristin Tripalmitin Tristearin</p> <p>Stimulant Capsicum frutescens extract Eleuthero ginseng (Acanthopanax senticosus) extract Guarana (Paullinia cupana) extract Lactococcus hydrolysate Methylsilanol elastinate Methylsilanol hydroxyproline aspartate TEA-hydroiodide Tocopheryl nicotinate Urocanic acid Yeast (Saccharomyces cerevisiae) extract (Faex) Zedoary (Curcuma zedoaria) oil Zinc DNA</p> <p>Sunscreen Basil (Basilicum santum) oil extract Basil (Ocimum basilicum) extract Benzophenone-3 -4 3-Benzylidene camphor Borjoo sorbilis extract C12-15 alkyl benzoate Coffee (Coffea arabica) bean extract Ethyl salicylate Glyceryl PABA Homosalate Hydroquinone-beta-D-glucopyranoside Isoamyl p-methoxycinnamate Isopropylbenzyl salicylate Job's tears (Coix lacryma-jobi) extract Menthyl anthranilate Octyl dimethyl PABA, O. methoxycinnamate Octyl salicylate, O. triazone Oryzanol Pansy (Viola tricolor) extract PEG-25 PABA Phenylbenzimidazole sulfonic acid Rice (Oryza sativa) bran oil TEA-salicylate Titanium dioxide</p> <p>Sunscreen UVB Benzophenone-5 Eclipta alba extract PEG-25 PABA Steareth-100 Tridecyl salicylate</p>	<p>Superfating agent Linoleamide DEA PEG-20 almond glycerides PEG-60 lanolin PEG-75 lanolin</p> <p>Surfactant Alkyl dimethyl betaine Alkyldimethylamine oxide Ammonium cocoyl sarcosinate Ammonium C12-15 alkyl sulfate Ammonium dimethicone copolyol sulfate Ammonium laureth-5 sulfate Ammonium laureth-12 sulfate Ammonium laureth sulfate Ammonium lauroyl sarcosinate Ammonium lauryl sulfate, A.I. sulfosuccinate Ammonium myreth sulfate Ammonium nonoxynol 4 sulfate Azelaamide MEA C20-40 alcohol ethoxylate C30-50 alcohol ethoxylate C40-60 alcohol ethoxylate Calcium dodecylbenzene sulfonate Calcium laurate Cetareth-2 phosphate Cetareth-5 phosphate Cetareth-10 phosphate Cetoleth-25 Cetyl betaine, C. phosphate Cocamide MEA ethoxylate Cocamidopropyl betaine, potassium salt Cocamidopropyl betaine ammonium salt Cocamidopropyl hydroxy sultaine Cocamidopropyl hydroxy sultaine, ammonium salt Cocamidopropyl hydroxy sultaine, potassium salt Cocamidopropylamine oxide Coceth-7 carboxylic acid Coco-glucoside Cocoamphodiacetate lauryl-laureth sulfate Cocoamphodiacetate lauryl sulfate Cocoamphodiacetate trideceth sulfate Coco phosphatidyl PG-dimonium chloride N-Cocoyl-(3-amidopropyl)-N,N-dimethyl-N-ethyl ammonium ethyl sulfate Cocoyl glutamic acid Cocoyl hydrolyzed soy protein Cocoyl hydroxyethyl imidazoline C11-15 pareth-9, -12, -20, -30, -40 C12-13 pareth sulfate C12-13 pareth-5 carboxylic acid C12-15 pareth-12 C14-15 pareth-8 carboxylic acid DEA-oleth-5-phosphate DEA-oleth-20-phosphate Deceth-3, -6, -8 Decyltetradeceth-25 Dicetareth-10 phosphoric acid Dimethicone copolyol Dimethicone copolyol almondate, D. c. isostearate Dimethicone copolyol laurate, D. c. olivate Dimethicone copolyol phthalate Dimethicone copolyolamine Dimethicone propyl PEG-betaine Diocryldodeceth-2 lauroyl glutamate Diocryldodeceth-5 lauroyl glutamate Diocryldodecyl lauroyl glutamate Disodium capryloamphodiacetate Disodium cocoamphodiacetate Disodium hydrogenated tallow glutamate Disodium laneth-5 sulfosuccinate Disodium lauramide MEA-sulfosuccinate Disodium laureth sulfosuccinate Disodium oleamide MIPA-sulfosuccinate Disodium oleamide PEG-2 sulfosuccinate Disodium oleth-3 sulfosuccinate Disodium ricinoleamide MEA-sulfosuccinate Disodium tallamide MEA-sulfosuccinate Distareth-2 lauroyl glutamate</p>
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Functions

Disteareth-5 lauroyl glutamate	PEG-80 jojoba oil. P. sorbitan laurate	Sodium lauroyl glutamate
Ethoxylated fatty alcohol	PEG-120 jojoba oil	Sodium lauroyl hydrolyzed collagen
Ethoxylated glycerol sorbitan saturated fatty acid ester	Pentasodium triphosphate	Sodium lauroyl sarcosinate. S. l. taurate
Ethoxylated glycerol sorbitan unsaturated fatty acid ester	Poloxamer 101, 122	Sodium magnesium laureth sulfate
Glycereth-25 PCA isostearate	Polyglyceryl-2 dioleate	Sodium methyl cocoyl taurate
Glycereth-26 phosphate	Polysiloxane-polyether copolymer	Sodium methyl oleoyl taurate
Glyceryl hydroxystearate	Potassium cocoyl glycinate	Sodium myristoyl glutamate
Hydrogenated tallowoyl glutamic acid	Potassium cocoyl hydrolyzed collagen	Sodium myristoyl hydrolyzed collagen
Isopropyl hydroxybutyramide dimethicone copolyol	Potassium C9-15 phosphate ester	Sodium myristoyl sarcosinate
Laureamidopropyl betaine	Potassium lauryl sulfate	Sodium myristyl sulfate
Laureth-1, -2, -3, -4, -7, -12, -16	Potassium myristoyl hydrolyzed collagen	Sodium nonoxynol-6 phosphate
Laureth-3 carboxylic acid. L. phosphate	Potassium oleoyl hydrolyzed collagen	Sodium octoxynol-2 ethane sulfonate
Laureth-5 carboxylic acid	Potassium palmitate	Sodium octyl sulfate
Laureth-11 carboxylic acid	Potassium undecylenoyl hydrolyzed collagen	Sodium oleoyl hydrolyzed collagen
Lauroyl sarcosine	PPG-2-isodeceth-4 -6 -9 -12	Sodium stearyl hydrolyzed collagen
Lauryl dimethylamine cyclocarboxypropyloleate	PPG-6 C12-18 pareth-11	Sodium trideceth sulfate
Lauryl hydroxyethyl imidazoline	Protein hydrolysates	Sodium undecylenoyl hydrolyzed collagen
Linoleamide DEA	Quaternium-80	Sodium/TEA-lauroyl hydrolyzed collagen
Magnesium laureth-8 sulfate	Quillaja saponaria extract	Sodium/TEA-lauroyl hydrolyzed keratin
Meroxapol 105, 171, 172	Raffinose laurate. R. myristate. R. oleate	Sorbitan isostearate
MEA-lauryl sulfate	Raffinose palmitate. R. stearate	Stearoyl sarcosine
Mixed isopropanolamines myristate	Ricinoleamidopropyl betaine	Sulfated castor oil
Myreth-7	Silicone quaternium-1, -8, -9	TEA-cocoyl glutamate
Myristoyl sarcosine	Sodium alpha olefin sulfonate	TEA-cocoyl hydrolyzed collagen
Myristyl alcohol	Sodium cocoamphacetate	TEA-cocoyl hydrolyzed soy protein
Nonoxynol-7, -9, -13, -15	Sodium cocoyl hydrolyzed wheat protein	TEA-C12-15 alkyl sulfate
Nonoxynol-10 carboxylic acid	Sodium cocoyl isethionate	TEA-hydrogenated tallow glutamate
Octoxynol-10, -12	Sodium C12-13 sulfate	TEA-lauroyl glutamate
Octyldodeceth-10, -16	Sodium C12-14 pareth-2 sulfate	TEA-lauroyl keratin amino acids
Oleoyl sarcosine	Sodium C12-15 pareth-3 sulfonate	TEA-lauroyl sarcosinate
Oleth-2 phosphate	Sodium C12-15 pareth-7 carboxylate	TEA-lauryl sulfate
Oleth-5 phosphate	Sodium C12-15 pareth-7 sulfonate	TEA-myristoyl hydrolyzed collagen
Oleyl betaine	Sodium C12-15 pareth-8 carboxylate	Tocophereth-5 -10 -18 -20 -30 -50 -70
Oleyl hydroxyethyl imidazoline	Sodium C12-15 pareth-15 sulfonate	Trideceth-7 carboxylic acid
Palmitamine oxide	Sodium C12-18 alkyl sulfate	Trideceth-9
Palmityl betaine	Sodium C13-17 alkane sulfonate	Trideceth-19-carboxylic acid
PCA ethyl cocoyl arginate	Sodium C14-16 olefin sulfonate	Tridecyl ethoxylate
PEG-7 hydrogenated castor oil	Sodium cetearyl sulfate	Triethanolamine C10-14 sulfate
PEG-8 caprylic/capric glycerides	Sodium cetyl oleyl sulfate	Tri-lauryl phosphate
PEG-8 laurate	Sodium coco-tallow sulfate	Wheat germamidopropyl betaine
PEG-8 stearate	Sodium cocoyl glutamate	Yucca vera extract
PEG-15 glyceryl stearate	Sodium cocoyl hydrolyzed collagen	
PEG-25 glyceryl isostearate	Sodium cocoyl hydrolyzed soy protein	Suspending agent
PEG-27 lanolin	Sodium cocoyl sarcosinate	Acrylates/ceteth-20 methacrylates copolymer
PEG-30 lanolin	Sodium dimethicone copolyol acetyl methylaurate	Acrylates/steareth-20 methacrylate copolymer
PEG-40 castor oil	Sodium hydrogenated tallow glutamate	Algin
PEG-40 glyceryl stearate	Sodium isodecyl sulfate	Bentonite
PEG-40 jojoba oil. P. lanolin	Sodium laureth-5 carboxylate	C10 polycarbamyl polyglycol ester
PEG-60 glyceryl isostearate. P. g. stearate	Sodium laureth-11 carboxylate	Calcium alginate
	Sodium laureth-13-carboxylate	Carbomer. C. 934
	Sodium laureth sulfate	Carrageenan (Chondrus crispus)
	Sodium lauroamphacetate	Cellulose gum
		Cetyl hydroxyethylcellulose

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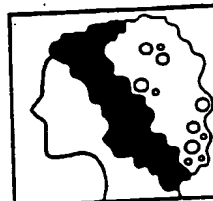
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Functions

Dihydrogenated tallow phthalic acid amide
Distearyl phthalic acid amide
Guar (Cyanopsis tetragonoloba) gum
Hectorite
Hydroxypropylcellulose
Isobutylene/MA copolymer
Magnesium aluminum silicate
Methylcellulose
Pentamodium triphosphate
Polyethylene, P. micronized
Propylene glycol alginate
Quaternium-18 bentonite
Quaternium-18 hectorite
Sodium magnesium silicate
Sodium polynaphthalenesulfonate
Stearalkonium bentonite, S. hectorite
Starch-10 allyl ether/acrylates copolymer
Tragacanth (Astragalus gummifer) gum
Tribehenin
Trihydroxystearin
Trimethamine magnesium aluminum silicate
Xanthan gum

Sweetener

Calcium saccharin
Fructose
Glycylsuccinic acid
Glycylmalic acid
Glycylrhizin, ammoniated
Hydrolyzed corn starch
Lactose
Maltitol
Mannitol
Saccharin
Sodium saccharin
Sorbitol
Sucrose

Tanning accelerator

Acetyl tyrosine
Carrot (Daucus carota) extract
Copper acetyl tyrosinate methylsilanol
Dihydroxyacetone
Disodium methyl tyrosinate
Eclipta alba extract in white emulsion
Glucose tyrosinate

Thickener

Acrylates-VA crosspolymer
Acrylates/C10-C30 alkyl acrylate crosspolymer
Acrylates/ceteth-20 itaconate copolymer
Acrylates/ceteth-20 methacrylates copolymer
Acrylates/steareth-20 itaconate copolymer
Acrylates/steareth-20 methacrylate copolymer
Acrylates/steareth-30 acrylate copolymer
Acrylates/vinyl isodecanoate crosspolymer
Acrylic acid/acrylonitrile copolymer
Algin
Aluminum/magnesium hydroxide stearate
Ammonium acrylates/acrylonitrile copolymer
Ammonium alginate
Arachidyl alcohol
Behenic acid
Behenyl alcohol, B. behenate
Bentonite
C10 polycarbamyl polyglycol ester
C12-15 alcohols
C12-16 alcohols
C18-36 acid

Calcium alginate
Calcium carrageenan
Caprylic alcohol
Carbomer
Carboxymethyl hydroxyethylcellulose
Carrageenan (Chondrus crispus)
Cellulose, C. gum
Cetearyl alcohol, C. behenate
Cetearyl octanoate, C. stearate
Cetostearyl stearate
Cetyl alcohol
Cetyl hydroxyethylcellulose
Cetyl myristate, C. palmitate
Cocamide
Cocamide MEA, C. MIPA
Cocamidopropylamine oxide
Coco-betaine
Coco-rapeseedate
Coco/oleamidopropyl betaine
Cocoyl amido hydroxy sulfo betaine
Cocoyl monoethanolamide ethoxylate
Colloidal silica sols
DEA-hydrolyzed lecithin
DEA-linoleate
DEA-oleth-3 phosphate
DEA-oleth-10 phosphate
Decyl alcohol
Dextran
Dextrin
Dilaureth-10 phosphate
Dioleth-8 phosphate
DMHF
Ethoxylated fatty alcohol
Gellan gum
Glycerol behenate, G. stearate
Glycerol polymethacrylate
Guar (Cyanopsis tetragonoloba) gum
Guar hydroxypropyltrimonium chloride
Hectorite
Hexyl alcohol
Hydrated silica
Hydrogenated rapeseed oil
Hydrogenated starch hydrolysate
Hydrogenated talloweth-60 myristyl glycol
Hydrolyzed oat flour
Hydrolyzed transgenic collagen
Hydroxyethylcellulose
Hydroxypropyl chitosan
Hydroxypropyl guar
Hydroxypropyl methylcellulose
Hydroxypropylcellulose
Isoceteth-10
Isostearamide DEA
Isostearamidopropylamine oxide
Isostearamphopropionate
Jaya wax
Kappa (Sterculia urens) gum
Lauramide DEA, L. MEA, L. MIPA
Lauramidopropyl betaine
Laurth-10
Laurth-linoleic DEA
Laurth-linoleyl diethanolamide
Laurth-l-myristoyl diethanolamide
Laurth alcohol, L. betaine
Laurthamide DEA, L. MEA
Laurthic acid
Laurthic acid
Laurth bean (Ceratonia siliqua) gum
Magnesium aluminum silicate

MDM hydantoin
Methylcellulose
Montmorillonite
Myristamide DEA, M. MEA
Myristamine oxide
Myristyl alcohol
Octacosanyl stearate
Oleamide, O. DEA, O. MEA
Palmitamide MEA
Pectin
PEG-2 laurate
PEG-3 distearate, P. lauramide
PEG-3 lauramine oxide
PEG-4 diisostearate, P. oleamide
PEG-5M
PEG-6 beeswax
PEG-7 hydrogenated castor oil
PEG-8
PEG-8 dioleate, P. distearate
PEG-8 stearate
PEG-9M
PEG-12 beeswax
PEG-18 glyceryl oleate/cocaoate
PEG-23M
PEG-28 glyceryl tallowate
PEG-40 jojoba oil
PEG-45M
PEG-50 tallow-amide
PEG-55 propylene glycol oleate
PEG-75 stearate
PEG-90M
PEG-100 stearate
PEG-120 methyl glucose dioleate
PEG-150 distearate
PEG-150 pentaerythrityl tetrastearate
PEG-160M
PEG-200 glyceryl stearate
PEG-200 glyceryl tallowate
Pentaerythrityl tetrahehenate
Pentaerythrityl tetrastearate
Poloxamer 105, 124, 185, 237, 238, 338, 407
Polyacrylic acid
Polyorbate 20
Potassium alginate, P. chloride
Potassium oleate, P. stearate
PPG-5-ceteth-10 phosphate
Propylene glycol stearate
PVM/MA decadiene crosspolymer
PVP
Quaternium-18 bentonite
Quaternium-18 hectorite
Rapeseed oil, ethoxylated high erucic acid
Ricinoleamide MEA
Sesamide DEA
Sodium acrylates/vinyl isodecanoate crosspolymer
Sodium carbomer, S. carrageenan
Sodium ceteth-13-carboxylate
Sodium chloride
Sodium magnesium silicate, S. stearate
Sorbitan sesquiosostearate, S. tristearate
Soyamide DEA
Soyamidopropyl betaine
Starch polyacrylonitrile copolymer-potassium salt
Starch polyacrylonitrile copolymer-sodium salt
Stearalkonium bentonite, S. hectorite
Stearamide
Stearamide DEA, S. MEA, S. MEA-stearate
Stearamidopropyl dimethylamine lactate
Stearamine oxide

3 BETTER IDEAS.**1 BETTER SOURCE.**

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Functions

Steareth-10 allyl ether/acrylates copolymer
 Stearic acid
 Stearyl alcohol
 Synthetic beeswax
 Tallowamide MEA
 TEA-acrylates/acrylonitril copolymer
 Tragacanth (*Astragalus gummifer*) gum
 Tribehnenin
 Trihydroxystearin
 Tromethamine magnesium aluminum silicate
 Wheat germamide DEA
 Wheat germamidopropyl betaine
 Xanthan gum

Thixotrope

Bentonite
 Hectorite
 Sodium magnesium silicate
 Stearalkonium bentonite

Toner

Althea officinalis extract
 Clover (*Trifolium pratense*) extract
 Dog rose (*Rosa canina*) hips extract
 Ginseng (*Panax ginseng*) extract
 Horsetail extract
 Lemon bioflavonoids extract
 Meadowsweet (*Spiraea ulmaria*) extract
 Nettle (*Urtica dioica*) extract
 Rose (*Rosa multiflora*) extract
 Rosemary (*Rosmarinus officinalis*) extract

UVA absorber

Benzophenone-1, -2, -3, -4, -6, -8, -9, -11, -12
 Butyl methoxydibenzoylmethane
 Corallina officinalis
 Isopropyl dibenzoylmethane
 Menthyl anthranilate
 2,2',4,4'-Tetrahydroxybenzophenone
 Titanium dioxide
 Zinc oxide

UVB absorber

Argania spinosa oil
 Benzophenone-1, -2, -3, -4, -6, -9, -11
 Corallina officinalis
 DEA-methoxycinnamate
 Drometrizole
 Ethyl dihydroxypropyl PABA
 Eucrylene
 Homosalate
 Isoamyl p-methoxycinnamate
 Isopropyl methoxycinnamate
 Isopropylbenzyl salicylate
 4-Methylbenzylidene camphor
 Octocrylene
 Octrizole
 Octyl dimethyl PABA
 Octyl methoxycinnamate
 Octyl salicylate, O, triazone
 PABA
 PEG-25 PABA
 Phenylbenzimidazole sulfonic acid
 Shea butter, ethoxylated
 TEA-salicylate
 Titanium dioxide
 TriPABA panthenol
 Zinc oxide

Vegetable oil

Apricot (*Prunus armeniaca*) kernel oil
 Avocado (*Persea gratissima*) oil
 Baobab oil
 Calendula officinalis oil
 Chaulmoogra (*Taraktogenos kurzii*) oil
 Coconut (*Cocos nucifera*) oil
 Corn (*Zea mays*) oil
 Cottonseed (*Gossypium*) oil

Gold of pleasure oil
 Grape (*Vitis vinifera*) seed oil
 Hazel (*Corylus avellana*) nut oil
 Hybrid sunflower (*Helianthus annuus*) oil
 Hydrogenated coconut oil
 Hydrogenated cottonseed oil
 Hydrogenated vegetable oil
 Jojoba (*Buxus chinensis*) oil
 Kukui (*Aleurites moluccana*) nut oil
 Macadamia (*ternifolia*) nut oil
 Meadowfoam (*Limnanthes alba*) seed oil
 Mexican poppy oil
 Palm (*Elaeis guineensis*) kernel oil
 Partially hydrogenated soybean oil
 Peach (*Prunus persica*) kernel oil
 Peanut (*Arachis hypogaea*) oil
 Pecan (*Carya illinoensis*) oil
 Pumpkin (*Cucurbita pepo*) seed oil
 Quinoa (*Chenopodium quinoa*) oil
 Rapeseed (*Brassica campestris*) oil
 Rice (*Oryza sativa*) bran oil
 Safflower (*Carthamus tinctorius*) oil
 Seabuckthorn oil
 Sesame (*Sesamum indicum*) oil
 Sisymbrium irio oil
 Soybean (*Glycine soja*) oil
 Sunflower (*Helianthus annuus*) seed oil
 Walnut (*Juglans regia*) oil
 Wheat (*Triticum vulgare*) germ oil
 Wild borage oil

Vitamin

Aesculus chinensis extract
 Ascorbic acid
 Ascorbic acid polypeptide
 Ascorbyl palmitate
 Biotin
 Calcium pantothenate
 Cholecalciferol
 Cyanocobalamin
 Eclipta alba extract
 Emblica officinalis extract
 Equisetum arvense extract
 Ergocalciferol
 Esculin
 Ethyl linoleate
 Folic acid
 Laminaria japonica extract
 Marsilea minuta extract
 Melaleuca bracteata extract
 Menadione
 Nasturtium sinensis extract
 Nelumbium speciosum extract
 Niacin
 Niacinamide, N, ascorbate
 Nicotinamide
 Nicotinic acid
 Ocimum basilicum extract
 Panthenyl triacetate
 Pantothenic acid
 Phytanadione
 Pyridoxine HCl
 Retinol
 Retinyl acetate, R, palmitate
 Retinyl palmitate polypeptide
 Retinyl propionate
 Riboflavin tetraacetate
 Sodium ascorbate
 Thiamine HCL
 Tocopherol
 Tocopheryl acetate, T, succinate

Wax

Bayberry (*Myrica cerifera*) wax
 Behenoxymethicone
 C16-18 alkyl methicone
 Candelilla (*Euphorbia cerifera*) wax
 Carnauba (*Copernicia cerifera*) wax

Ceresin

Cetyl dimethicone, C, isooctanoate
 Dialkyldimethylpolysiloxane
 Dimethiconol hydroxystearate
 Dimethiconol stearate
 Hydrogenated castor oil
 Hydrogenated cottonseed oil
 Hydrogenated jojoba oil, H, J, wax
 Hydrogenated palm kernel oil
 Hydrogenated rapeseed oil
 Hydrogenated rice bran wax
 Hydrogenated vegetable oil
 Isooctadecyl isononanoate
 Japan (*Rhus succedanea*) wax
 Jojoba esters
 Montan (*Montan cera*) wax
 Ouricury wax
 Ozokerite
 Polyglyceryl-3 beeswax
 Spermaceti
 Stearoxymethicone/dimethicone copolymer
 Stearoxymethylsilane
 Synthetic candelilla wax
 Synthetic carnauba

Wetting agent

Benzalkonium chloride
 Benzethonium chloride
 Cetalkonium chloride
 Cetareth-20
 Ceteth-20
 Cetyl pyridinium chloride
 Cocoamphodipropionic acid
 Decaglycerol monodiolate
 Deceth-9
 Dihydroabietyl methacrylate
 Dimethicone copolyol methyl ether
 Dimethicone copolyol phthalate
 Dioctyl sodium sulfosuccinate
 Ethyl hydroxymethyl oleyl oxazoline
 Hydroxylated milk glycerides
 Isolaureth-6
 Lanolin acid
 Lauryl pyrrolidone
 Lecithin
 Methyl hydrogenated rosinat
 Methyl rosinat
 Nonyl nonoxynol-5
 Octoxynol-8, 70
 Oleth-15
 Oleth-20 phosphate
 PEG-9 castor oil
 PEG-15 castor oil
 PEG-20 glyceryl stearate
 PEG-20 sorbitan triisostearate
 PEG-45 palm kernel glycerides
 PEG-60 almond glycerides, P, com glycerides
 PEG-60 shea butter glycerides
 PEG-70 mango glycerides
 PEG-75 shorea butter glycerides
 PEG-80 sorbitan laurate
 Poloxamer 123, 181, 182, 184, 235, 334
 Polyether trisiloxane
 Polyglyceryl-3 oleate
 Polyglyceryl-6 dioleate
 Polyglyceryl-10 tetraoleate
 Polysorbate 60, 80
 PPG-2-isodeceth-4, -6, -9, -12
 PPG-10 lanolin alcohol ether
 Propylene glycol
 Sodium butoxyethoxy acetate
 Sodium capryloamphohydroxypropylsulfonate
 Sodium decyl diphenyl ether sulfonate
 Sodium dodecylidiphenyl ether sulfonate
 Sodium lauryl sulfate
 Sulfated castor oil
 Triisocetyl citrate
 Triisostearin PEG-6 esters
 Yucca verna extract

Claims:

1. A cosmetic composition, comprising:

5 a cosmetically acceptable carrier, comprising a reverse thermal viscosifying polymer network comprising at least one poloxamer component randomly bonded to at least one poly(acrylic acid) component said polymer network capable of aggregation in response to a change in temperature; and

a cosmetically active agent which imparts a preselected cosmetic effect, said carrier and said agent disposed within an aqueous-based medium.

2. A cosmetic composition for topical application, comprising:

10 a cosmetically acceptable carrier, comprising a reverse thermal viscosifying polymer network comprising at least one poloxamer component capable of aggregation in response to a change in temperature randomly bonded to at least one poly(acrylic acid) component; and

15 a cosmetically active agent selected to treat imperfections or disorders of the skin, said carrier and said agent disposed within an aqueous-based medium.

3. The cosmetic composition of claim 1, wherein the cosmetic composition is a shampoo and the cosmetically active agent comprises a cleansing surfactant.

20 4. The cosmetic composition of claim 1, wherein the cosmetic composition is a moisturizer and the cosmetically active agent comprises a moisturizer.

25 5. The cosmetic composition of claim 1, wherein the cosmetic composition is a sunscreen and the cosmetically active agent comprises a uv-absorbing agent.

6. The cosmetic composition of claim 1, wherein the cosmetic composition is an acne cream and the cosmetically active agent comprises an antiacne agent.

5 7. The cosmetic composition of claim 1, wherein the cosmetic composition is a hair straightener and the cosmetic agent comprises a base for increasing the pH.

10 8. The cosmetic composition of claim 1, wherein the cosmetic composition is a sunless tanning lotion and the cosmetically active agent comprises skin tinting agent.

15 9. The cosmetic composition of claim 1, wherein the cosmetic composition is an antiperspirant and the cosmetically active agent comprises aluminum chlorhydrate.

20 10. The cosmetic composition of claim 1, wherein the cosmetic composition is a shaving cream and the cosmetically active agent comprises an emollient and a foaming surfactant.

11. The cosmetic composition of claim 1, wherein the cosmetic composition is a face cosmetic and the cosmetically active agent comprises a pigment.

25 12. The cosmetic composition of claim 1 or 2, wherein the cosmetic agent comprises a hydrophobic material, wherein the cosmetically acceptable carrier stabilizes the hydrophobic material in the aqueous medium.

13. The cosmetic composition of claim 2, wherein said cosmetic agent selected to treat imperfections or disorders of the skin is selected from the group consisting of acidulents, antiacne agents, anti-aging agents, anti-inflammatories, anti-irritants, antioxidants, depilatories, detergents, disinfectants, emollients, exfoliants, humectants, lubricants, moisturizers, skin conditioners, skin protectants, skin lightening agents, skin soothing agents, sunscreens, tanning accelerators and mixtures thereof.

14. The composition of claim 4, wherein said composition further comprises a cosmetic agent selected from the group consisting of humectants and emollients.

15. The composition of claim 1 or 2, further comprising one or more additives selected from the group consisting of preservatives, abrasives, acidulents, antiacne agents, anti-aging agents, antibacterials, anticaking, anticaries agents, anticellulites, antidandruff, antifungal, anti-inflammatories, anti-irritants, antimicrobials, antioxidants, astringents, antiperspirants, antiseptics, antistatic agents, antrngents, binders, buffers, additional carriers, chelators, cell stimulants, cleansing agents, conditioners, deodorants, depilatories, detergents, dispersants, emollients, emulsifiers, enzymes, essential oils, exfoliants, fibers, film forming agents, fixatives, foaming agents, foam stabilizers, foam boosters, fungicides, gellants, glosser, hair conditioner, hair set resins, hair sheen agents, hair waving agents, humectants, lubricants, moisture barrier agents, moisturizers, ointment bases, opacifier, plasticizer, polish, polymers, powders, propellant, protein, refatting agents, sequestrant, silicones, skin calming agents, skin cleansers, skin conditioners, skin healing, skin lightening agents, skin protectants, skin smoothing agents, skin softening agents, skin soothing agents, stabilizers, sunscreen agents, surfactants, suspending agents, tanning accelerators, thickeners, vitamins, waxes, wetting agents, liquefiers, colors, flavors and/or fragrances

16. The composition of claim 1, wherein the cosmetic composition takes a form selected from the group consisting of lotions, creams, sticks, roll-on formulations, mousses, sprays, aerosols, pad-applied formulations and masks.

5 17. The composition of claim 1, wherein the viscosification occurs at a temperature in the range of about 27 to 40°C.

18. The composition of claim 1, wherein the viscosification occurs at a temperature in the range of about 30 to 37°C.

10 19. The composition of claim 1, wherein said composition is formulated as a product selected from the group consisting of baby products, baby shampoos, lotions, powders and creams; bath preparations, bath oils, tablets and salts, bubble baths, bath fragrances bath capsules; eye makeup preparations, eyebrow pencil, eyeliner, eye shadow, eye lotion, eye makeup remover, mascara; fragrance
15 preparations, colognes, toilet waters, powders and sachets; noncoloring hair preparations, hair conditioner, hair spray, hair straighteners, permanent waves, rinses, shampoos, tonics, dressings and other grooming aids; color cosmetics: hair coloring preparations, hair dye, hair tints, hair color sprays, hair lighteners and hair bleaches;
20 makeup preparations, face powders, foundations, leg and body paints, lipstick makeup bases, rouges and makeup fixatives; manicuring preparations, basecoats, undercoats, cuticle softeners, nail creams, nail extenders, nail polish and enamel, and remover; oral hygiene products, dentrifices, mouthwashes; personal cleanliness, bath soaps, detergents, deodorants, douches and feminine hygiene product; shaving preparations,
25 aftershave lotion, beard softeners, men's talcum, shaving cream, shaving soap, preshave lotions; skin care preparations, skin cleansing preparations, skin antiseptics, depilatories, face and neck cleansers, body and hand cleansers, foot powders; moisturizers, night preparations, paste masks, skin fresheners; and suntan preparations, suntan creams, gels and lotions, and indoor tanning preparations.

20. The cosmetic composition of claim 1 or 2, wherein the poloxamer component is present in an amount in the range of about 0.01 to 20 wt% and the poly(acrylic acid component) is present in the amount of about 0.01 to 20 wt%.

5 21. The cosmetic composition of claim 1, wherein the polymer network comprises a plurality of poloxamers.

10 22. The cosmetic composition of claim 1, wherein the polymer network comprises a plurality of poloxamer components randomly bonded to a poly(acrylic acid) backbone.

23. The cosmetic composition of claim 1, wherein the reversibly viscosifying polymer composition comprises a plurality of poly(acrylic acid) components randomly bonded to a poloxamer component.

15 24. The cosmetic composition of claim 1, wherein the aqueous-based medium is selected from the group consisting of water, salt solutions and water with water-miscible organic compound(s).

20 25. The cosmetic composition of claim 1, further comprising an additive selected to increase transition temperature and increase viscosity of the reversible viscosifying polymer network.

25 26. The cosmetic composition of claim 1, further comprising an additive selected to increase transition temperature and decrease viscosity of the reversible viscosifying polymer network.

27. The cosmetic composition of claim 1, further comprising an additive selected to increase transition temperature without affecting viscosity of the reversible viscosifying polymer network..

5 28. The cosmetic composition of claim 1, further comprising an additive selected to decrease transition temperature and increase viscosity of the reversible viscosifying polymer network.

10 29. The cosmetic composition of claim 1, further comprising an additive selected to decrease transition temperature and decrease viscosity of the reversible viscosifying polymer network.

15 30. The cosmetic composition of claim 1, further comprising an additive selected to decrease transition temperature without affecting viscosity of the reversible viscosifying polymer network.

20 31. The cosmetic composition of claim 1, further comprising an additive selected to increase viscosity without affecting transition temperature of the reversible viscosifying polymer network.

32. The cosmetic composition of claim 1, further comprising an additive selected to decrease viscosity without affecting transition temperature of the reversible viscosifying polymer network.

25 33. The cosmetic composition of claim 1 or 2, characterized in that the gel remains translucent to light before and after response to the environmental stimulus.

34. The cosmetic composition of claim 1, wherein the poly(acrylic acid) is branched.

35. Method of making an cosmetic composition, comprising:

5 dissolving a poloxamer capable of aggregation in response to a change in temperature in acrylic acid monomer;

initiating polymerization of the monomer to form a poly(acrylic acid) randomly bonded to the poloxamer, so as to form a reversibly viscosifying polymer composition;

10 mixing the reversibly gelling polymer compositions with a cosmetic agent which imparts a desired cosmetic effect to the composition.

36. The method of claim 36, wherein a polymerization initiator is selected to provide the polymer network having a selected temperature of viscosification.

15 37. The method of claim 36, wherein one or more poloxamers are added.

38. The cosmetic composition of claim 1, wherein the reversibly viscosifying polymer network is present in an amount in the range of 0.01% 10%.

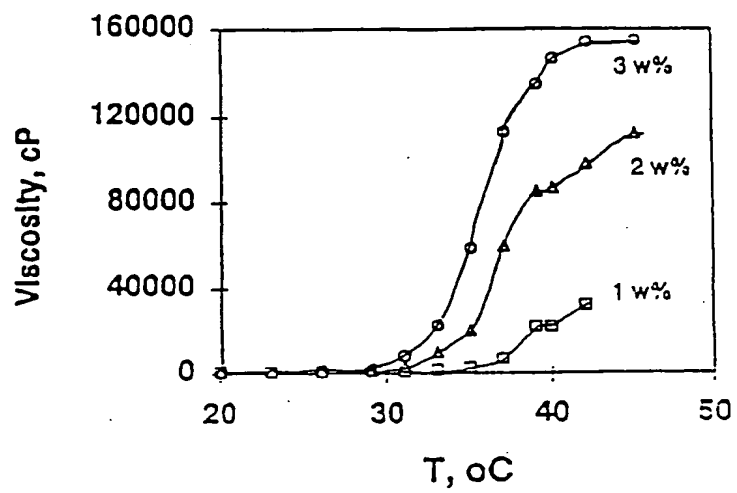


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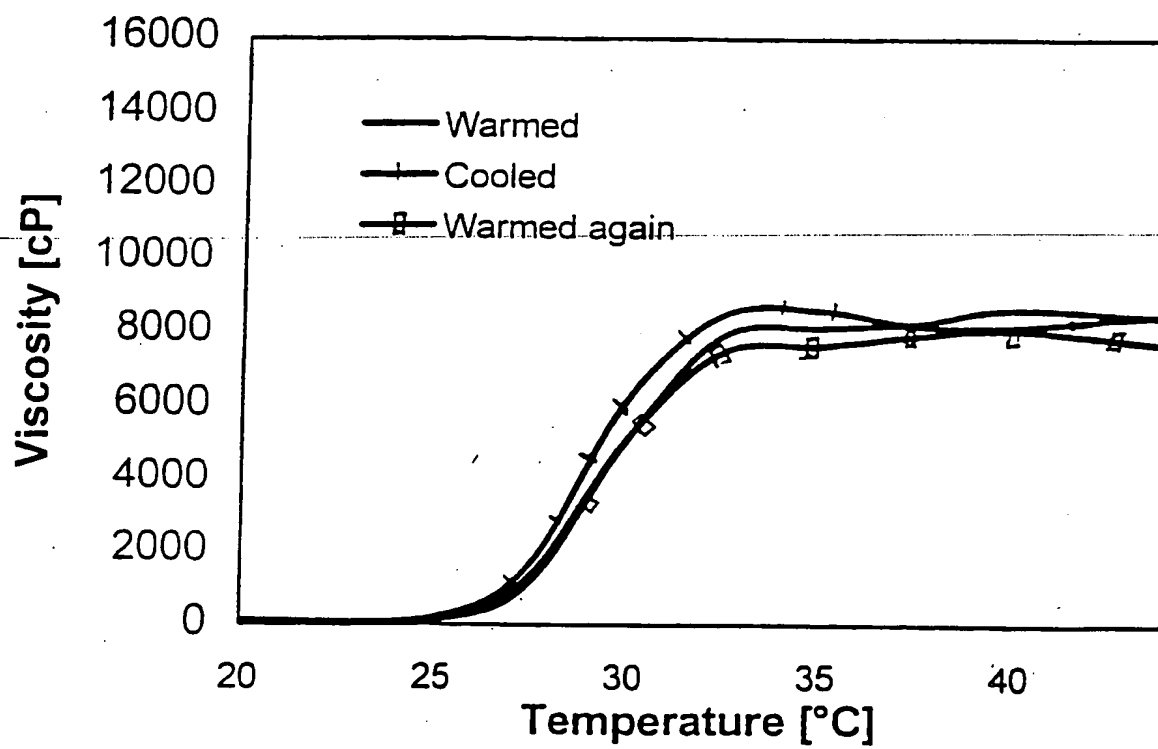


Figure 2

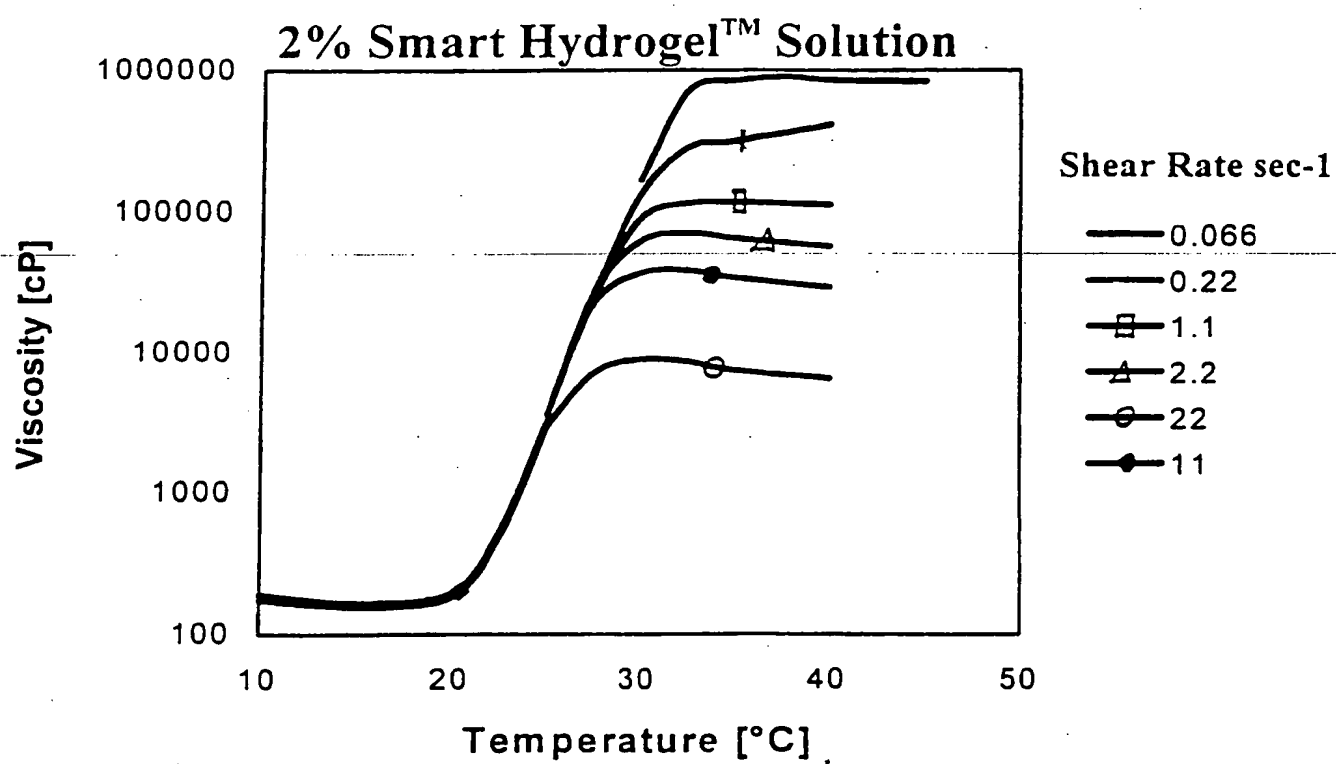


Figure 3

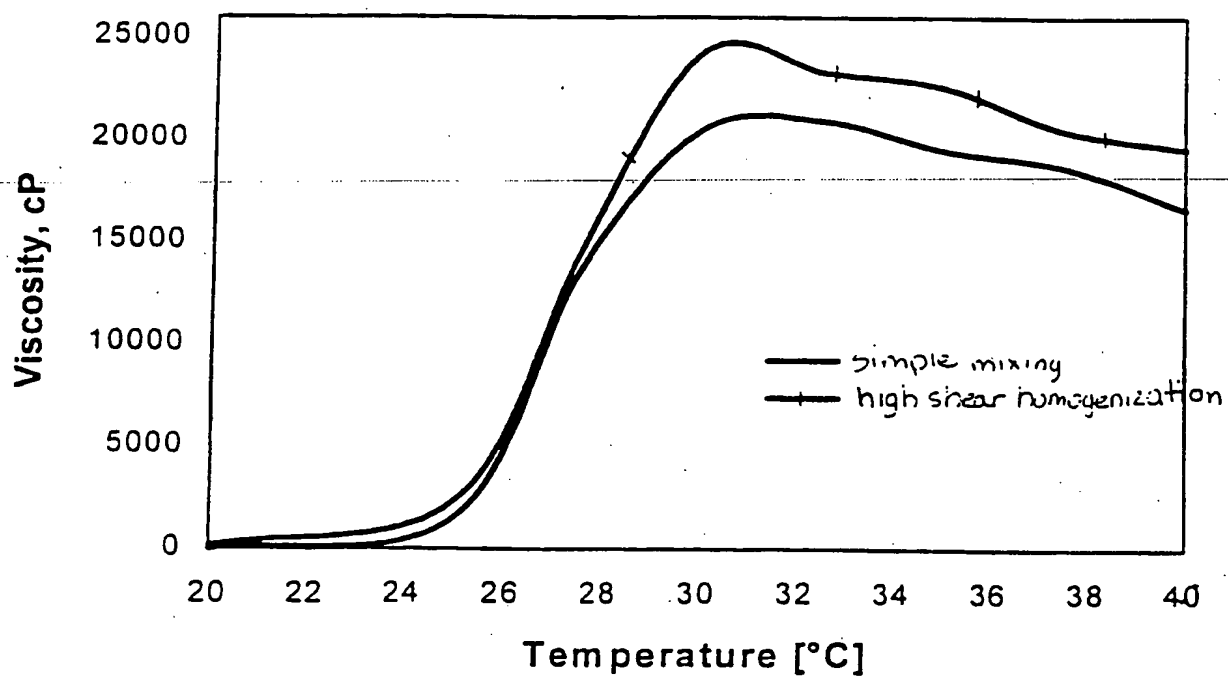


Figure 4

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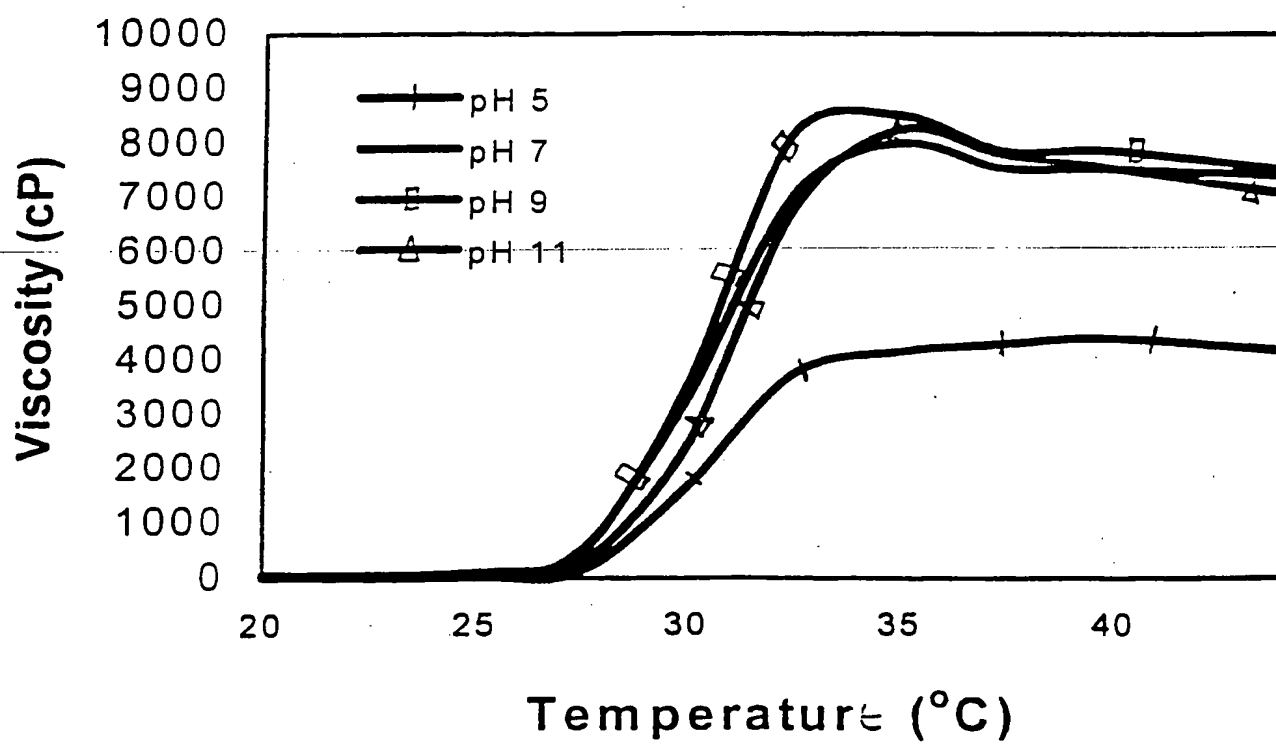


Figure 5

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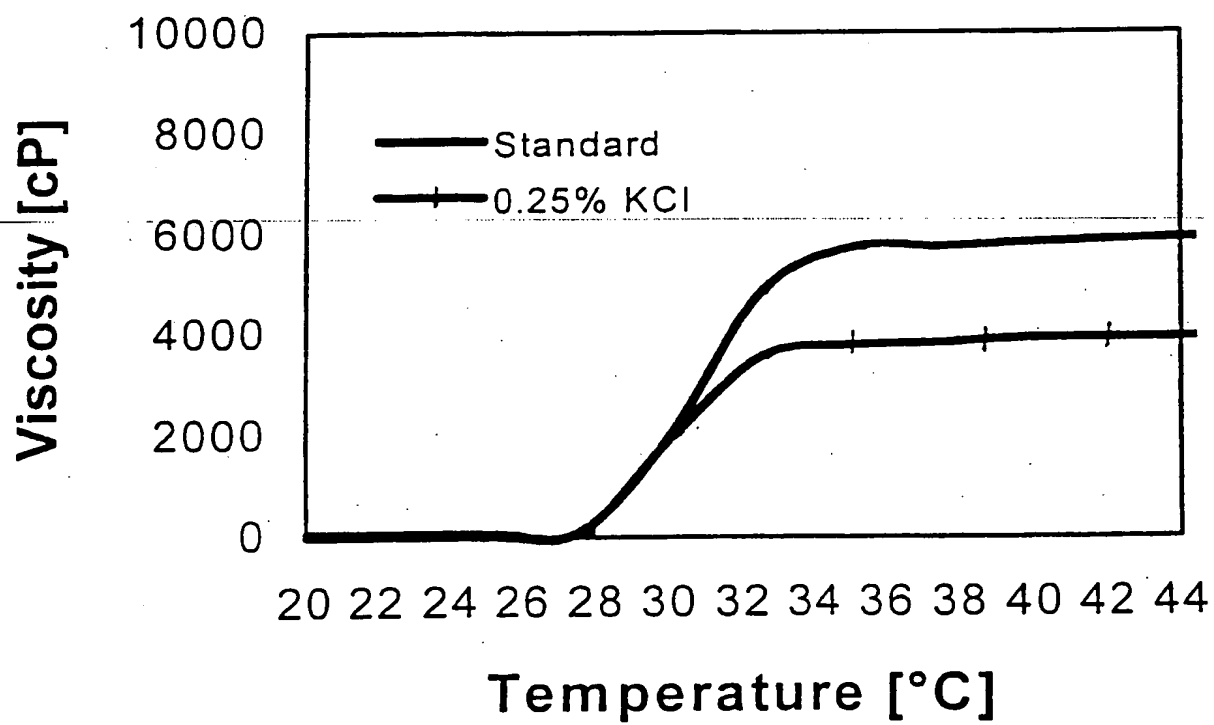


Figure 6

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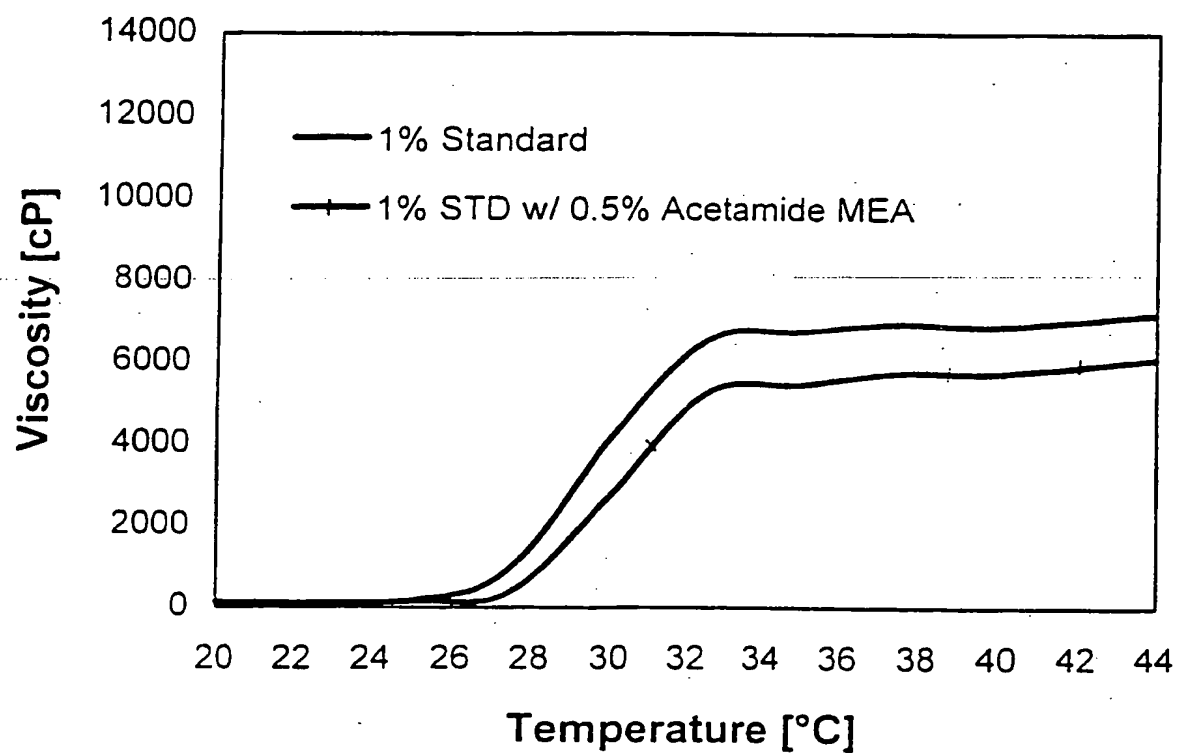


Figure 7

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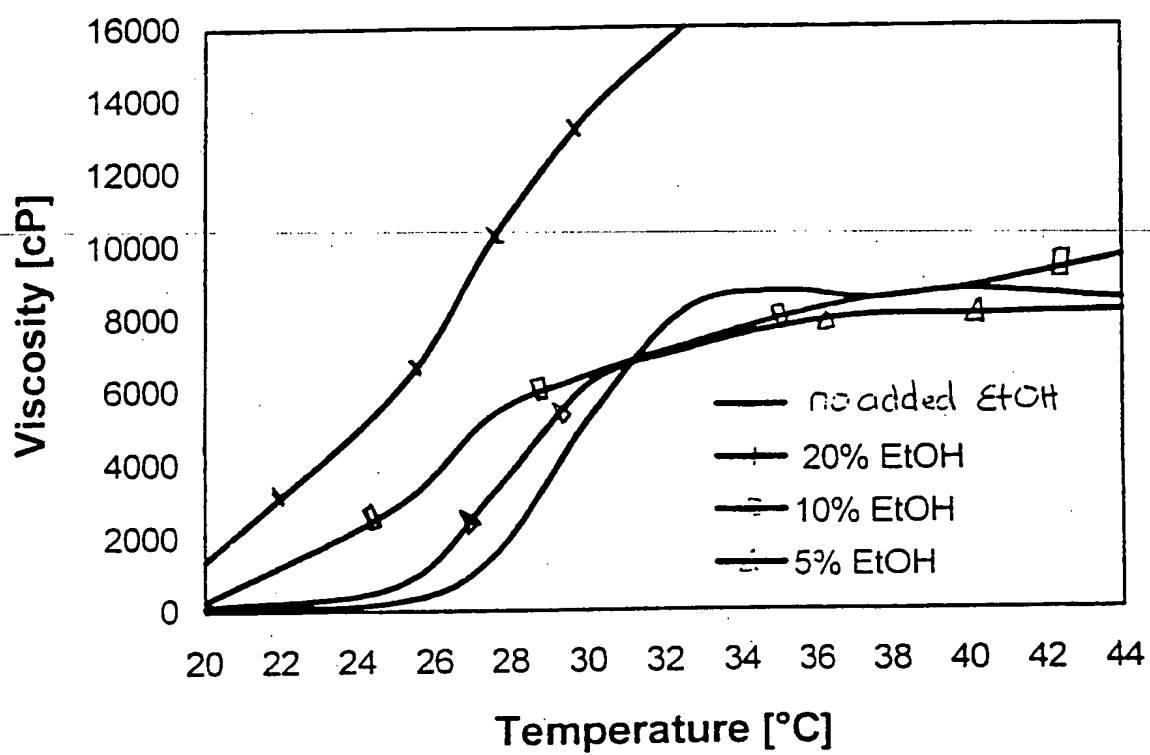


Figure 8

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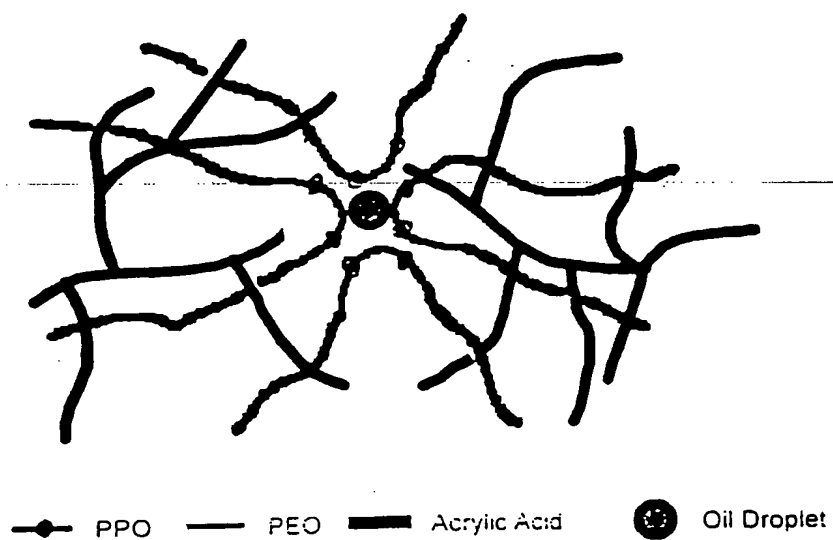
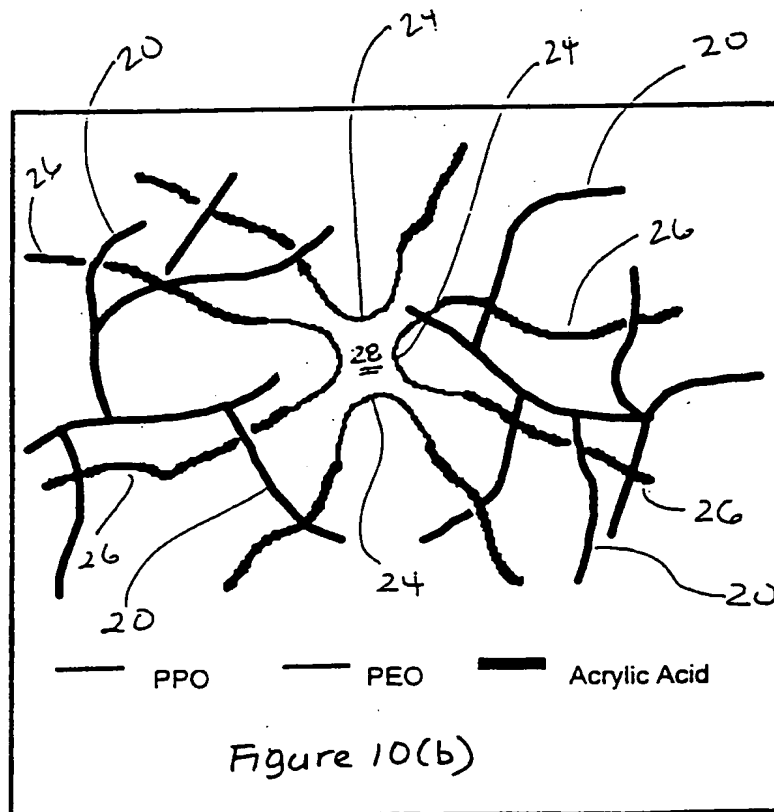
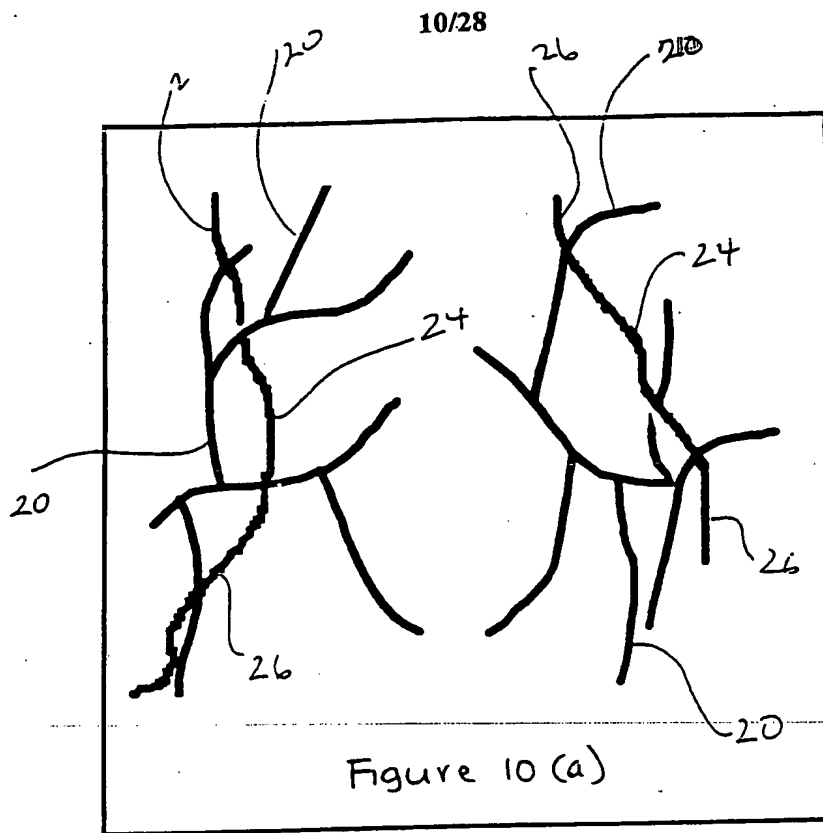


Figure 9



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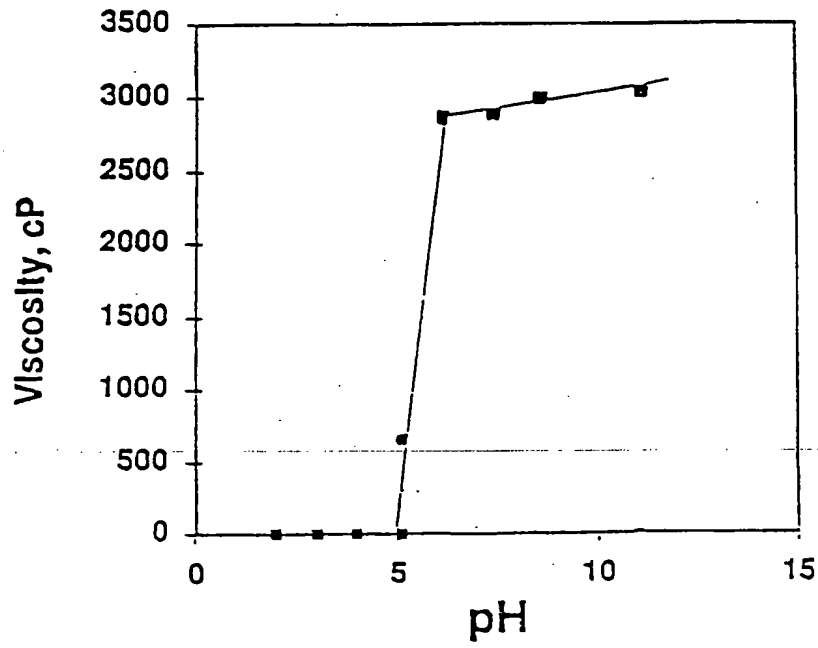


Figure 11

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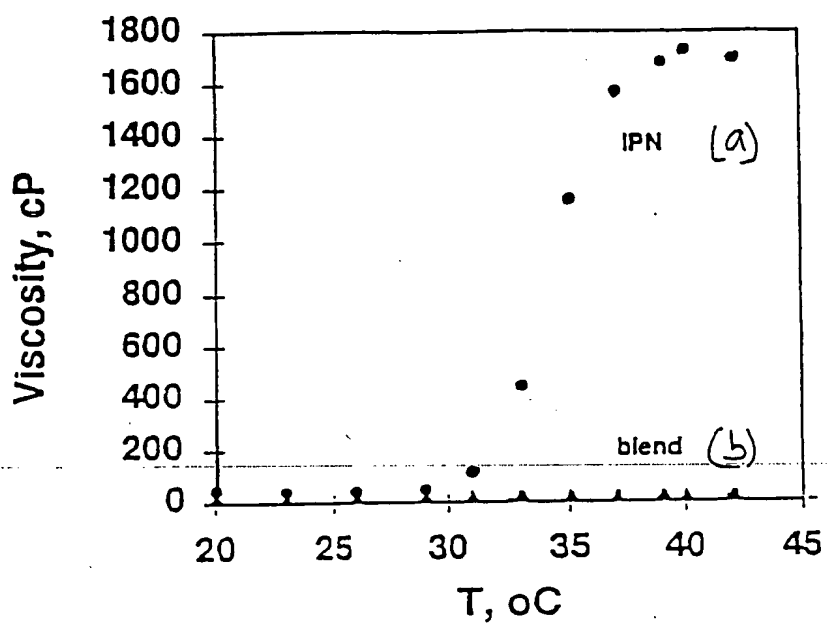


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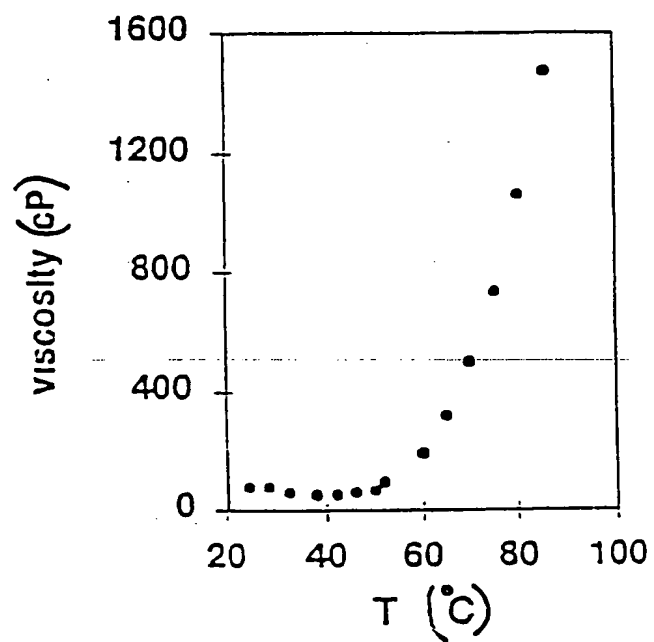


Figure 13

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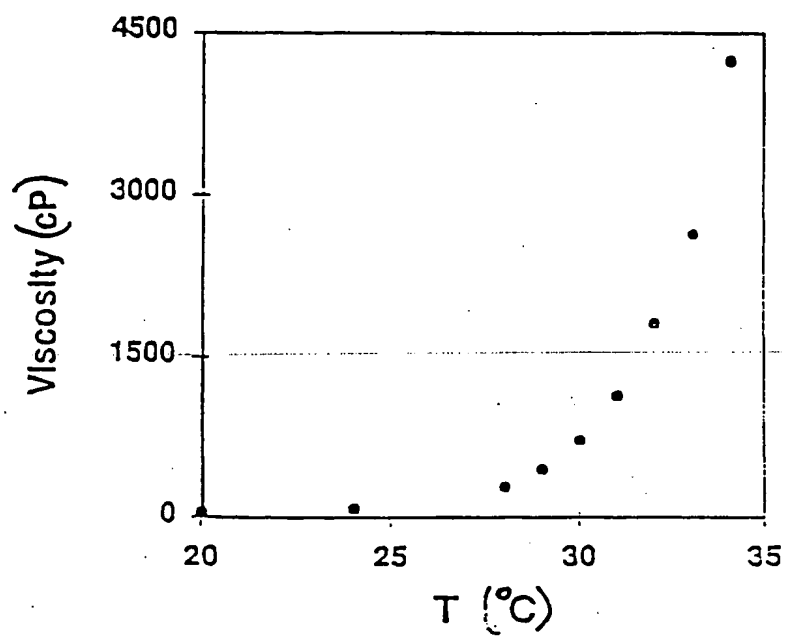


Figure 14

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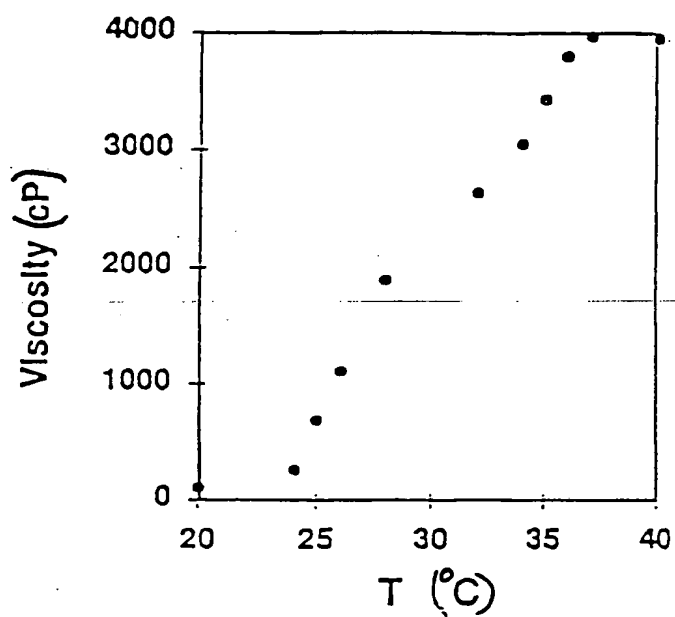


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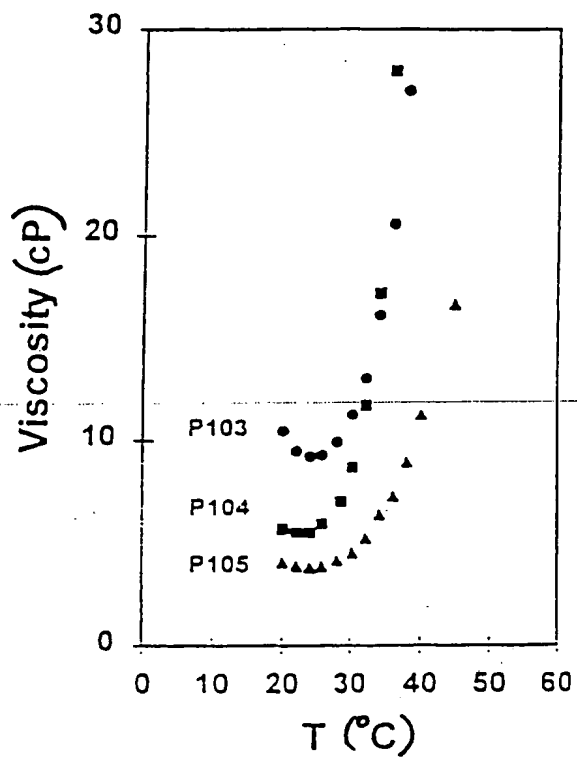


Figure 16

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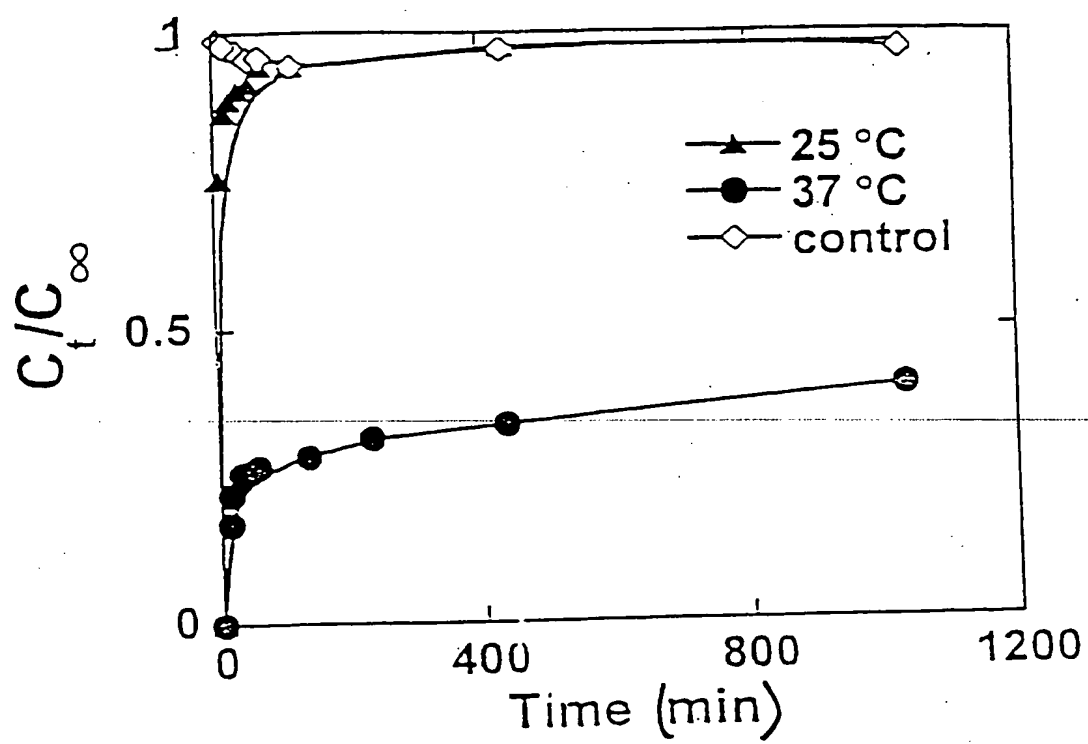


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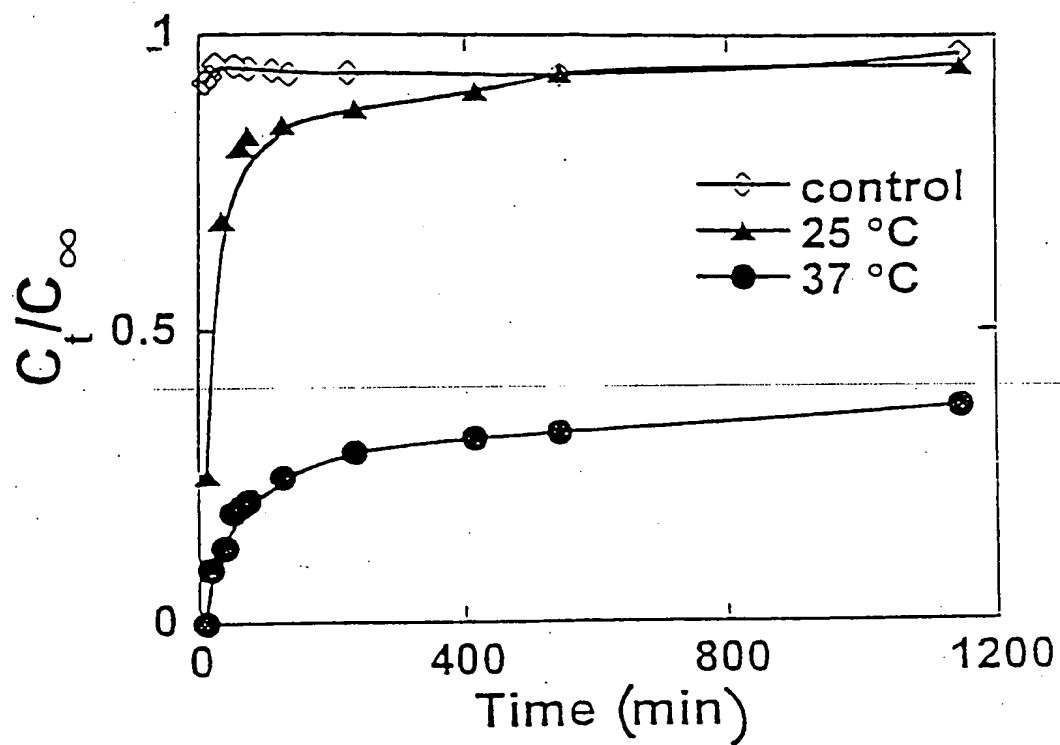


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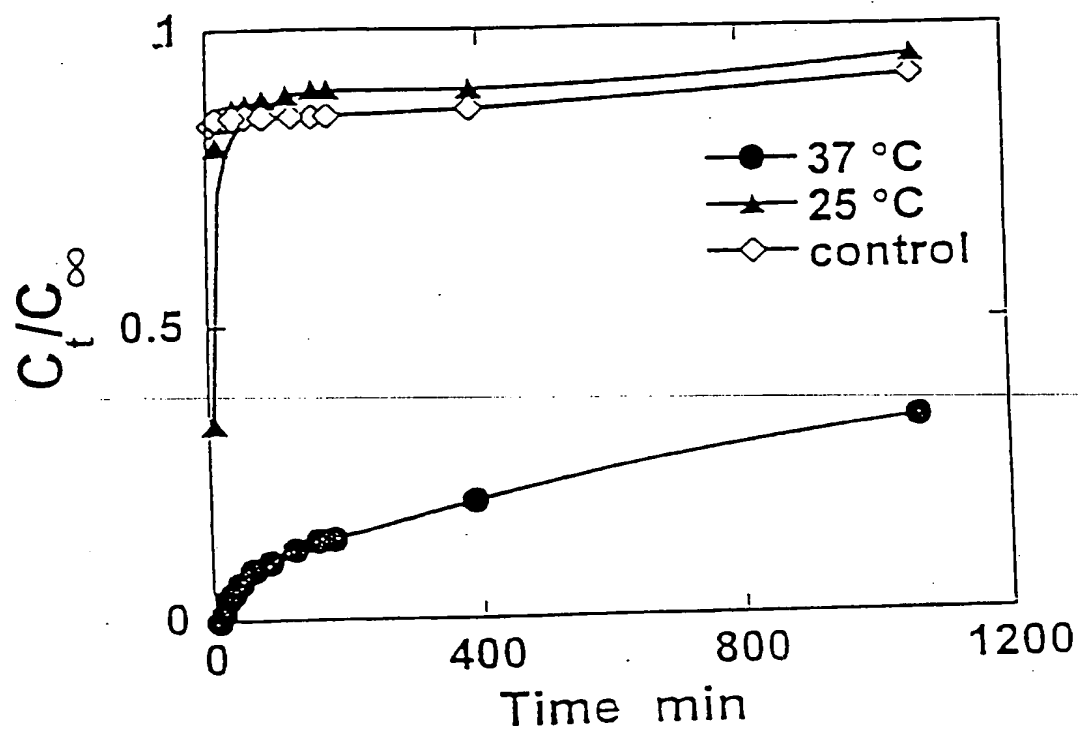


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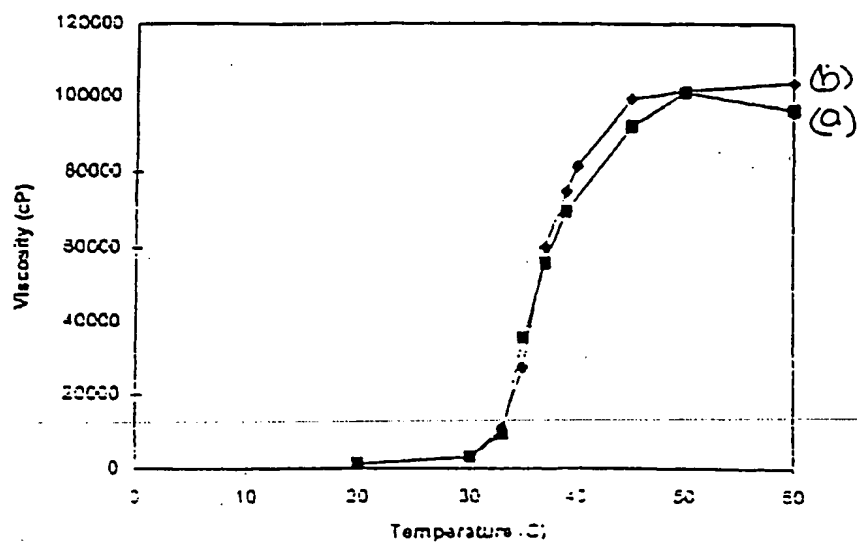


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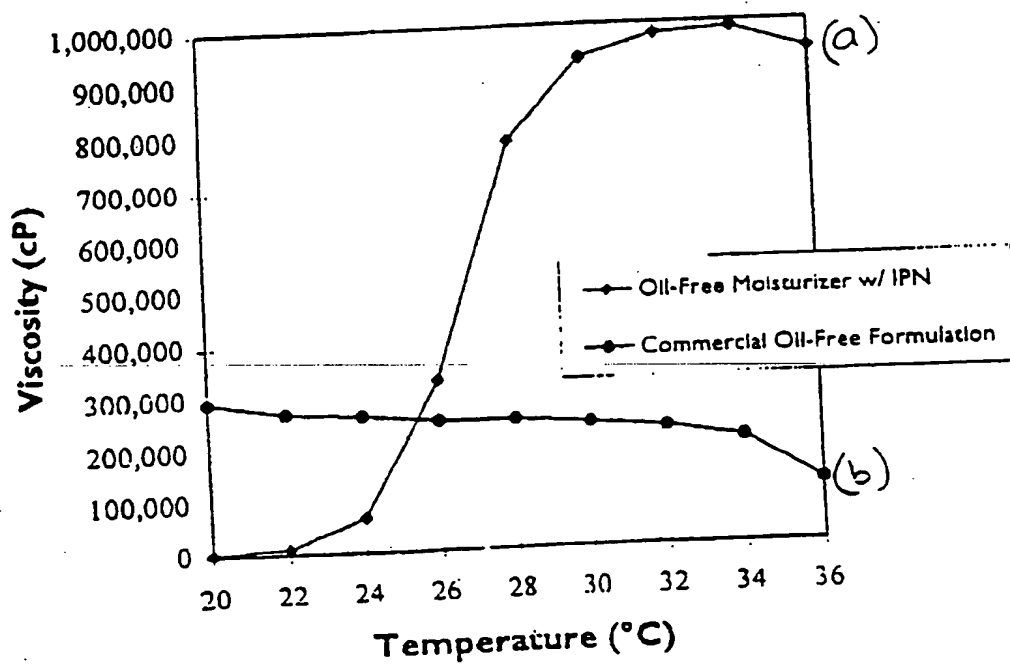


Figure 21

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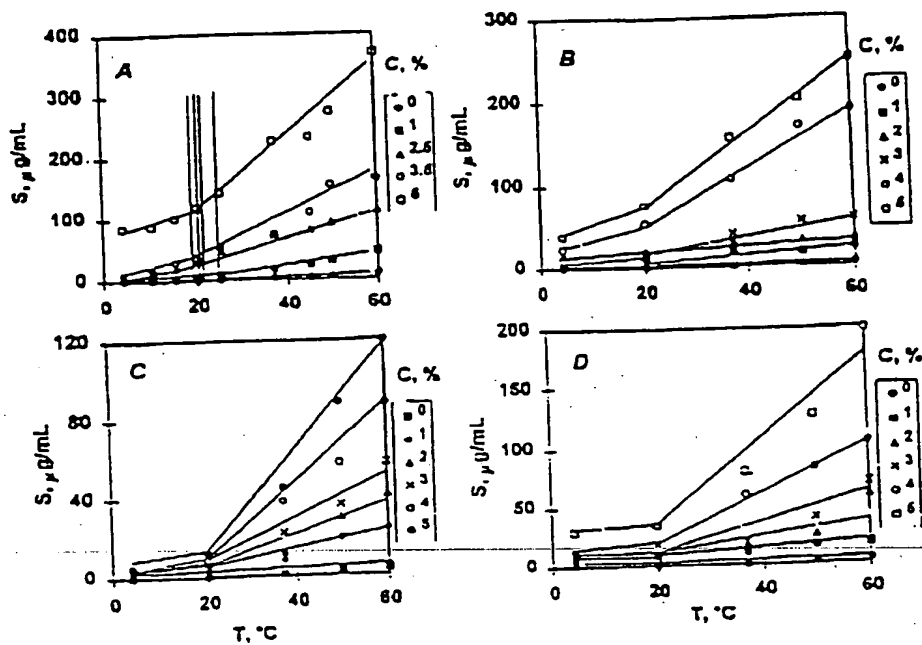


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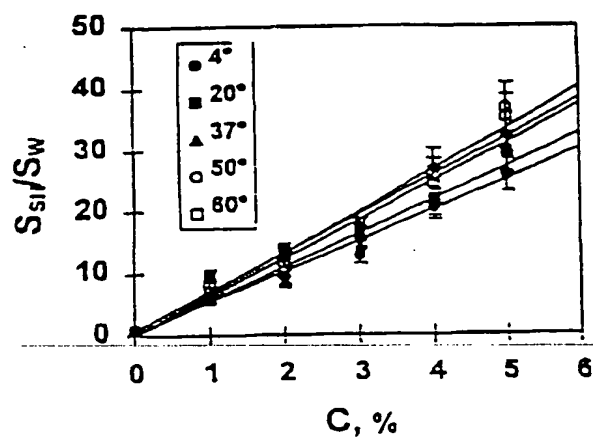


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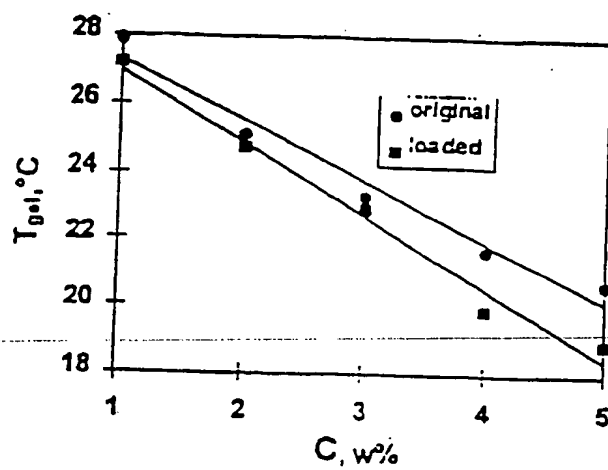
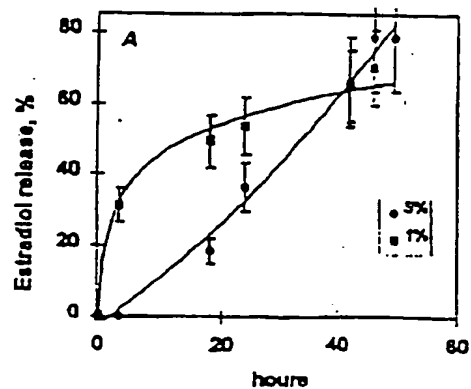
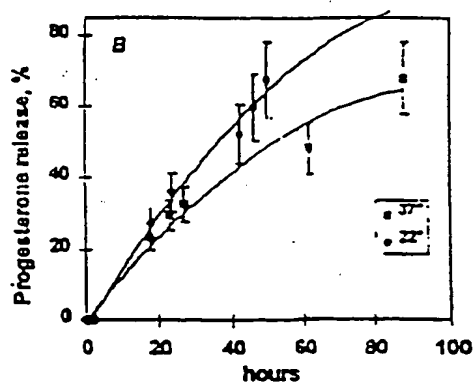


Figure 24

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a



b

Figure 25

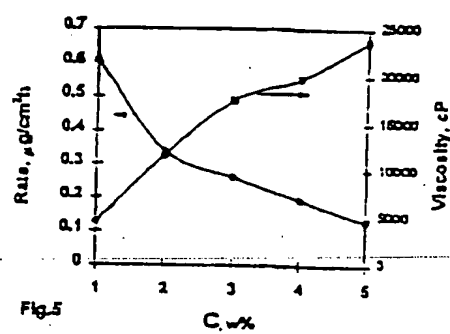


Figure 26

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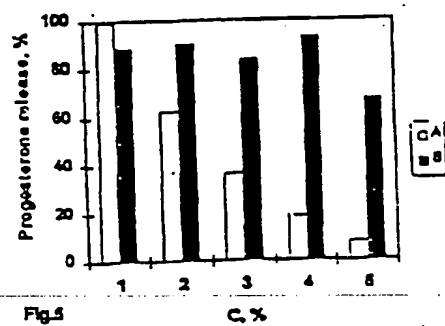


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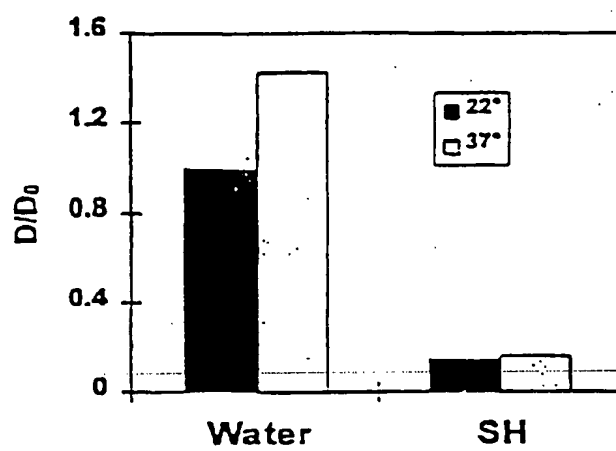


Figure 28

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US98/08931

A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) : A61K 7/00, 7/021, 7/06, 7/09, 7/16, 7/32, 7/42, 31/74

US CL : Please See Extra Sheet

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 424/49, 59, 63, 64, 65, 70.1, 70.2, 70.7, 78.02, 70.08, 400, 401, 405

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
NONE

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

APS: COSMETIC. POLYACRYLIC ACID. POLYMER NETWORK. POLOXAMER

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A, P	US 5,662,892 A (BOLICH, JR. et al.) 02 September 1997, see entire document.	1-38
Y	US 5,106,609 A (BOLICH, JR et al.) 21 April 1992, see entire document.	1-38

☐ Further documents are listed in the continuation of Box C.☐ See patent family annex.

Special categories of cited documents:	
A document defining the general state of the art which is not considered to be of particular relevance	*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
E earlier document published on or after the international filing date	*X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
I document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	*Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
O document referring to an oral disclosure, use, exhibition or other means	
P document published prior to the international filing date but later than the priority date claimed	*A* document member of the same patent family

Date of the actual completion of the international search

03 AUGUST 1998

Date of mailing of the international search report

02 OCT 1998

Name and mailing address of the ISA/US
Commissioner of Patents and Trademarks
Box PCT
Washington, D.C. 20231

Facsimile No. (703) 305-3230

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US98/08931

A. CLASSIFICATION OF SUBJECT MATTER:

US CL : 424/49, 59, 63, 64, 65, 70.1, 70.2, 70.7, 78.02, 70.08, 400, 401, 405

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